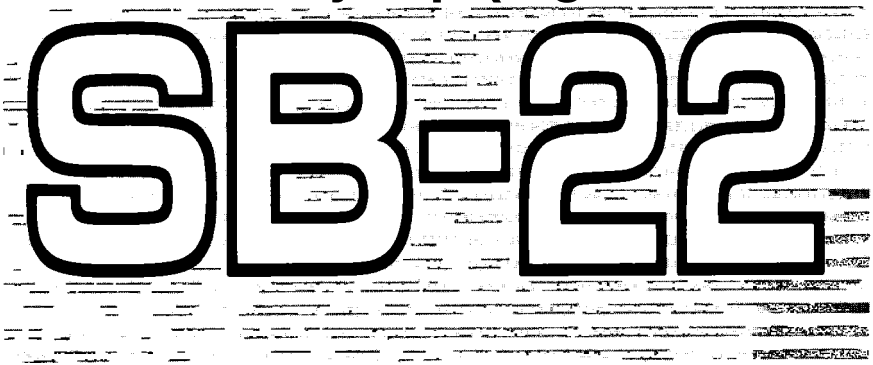
Nikon

-AutSfoSjs,,Spil(dligfii



INSTRUCTION MANUAL

=CONTENTS=

FOREWORD..... 3
NOMENCLATURE..... . 4-6
BASIC OPERATION 7-12
Installing Batteries..... 7
Attaching Flash Unit to Camera Accessory Shoe..... 8
Programmed TTL Auto Flash Shooting (with Nikon F-501/N2020, F-401/N4004 or F-301/N2000)..... 9-10
Flash Shooting..... 11-12
AUTOFOCUS FLASH PHOTOGRAPHY (with Nikon F-501/N2020 or F-401/N4004) ... 13-15
SETTING CAMERA SHUTTER SPEED..... 16
DETERMINING APERTURE..... 17-32
TTL Mode (for TTL Automatic Flash Exposure Control).... 17-21
A1 or A2 Mode (for Non-TTL Automatic Flash Exposure Control)..... 22-25
M Mode (for Manual Flash Exposure Control)... 26-28
MD Mode (for Manual Flash Exposure Control with Motor Drive Operation).....29-32
Guide Number.....32
SETTING POWER SWITCH..... 33
STBY (STANDBY) Position.....33
ON Position.....33
OFF Position.....33
READY-LIGHT INDICATIONS.....34-35
Ready-Light Warning Functions..... 35
USING WIDE-FLASH ADAPTER..... 36
SYNCHRO-SUNLIGHT FILL-IN FLASH PHOTOGRAPHY..... 37-39
In TTL Mode..... 38
In A1 or A2 Mode.....38
In M Mode.....39
DIFFUSING THE LIGHT..... 40-42
Bounce Flash Photography Procedure.....41
Using A Diffuser.....42
MULTIPLE FLASH EXPOSURES..... 42
MULTIPLE FLASH PHOTOGRAPHY..... 43-46
TTL Multiple Flash Photography.....43-45
Manual Multiple Flash Photography..... 46
AVOIDING “RED EYE”..... 46
CLOSE-UP FLASH PHOTOGRAPHY IN TTL MODE. .. 47
TIPS ON SPEEDLIGHT CARE..... 48-49
ABOUT BATTERIES..... 50
ACCESSORIES..... 51-52
Sync Cords SC-11 and SC-15.....51
TTL Remote Cord SC-17.....51
TTL Multi-Flash Adapter AS-10..... 51
TTL Multi-Flash Sync Cords SC-18 and SC-19.....52
Flash Unit Couplers AS-4 and AS-7..... 52
DC Unit SD-7..... 52
SPECIFICATIONS..... 53-54

—FOREWORD—

Thank you for purchasing the Nikon Auto-focus Speedlight SB-22. We hope the SB-22 will make photography a much bigger part of your life. Get to know your SB-22, but before using it, be sure to read both your camera instruction manual and this manual. Nikon cannot be held responsible for malfunctions resulting from use of the SB-22 other than as specified in this manual, or from use of the SB-22 with a camera made by a manufacturer other than Nikon.

For Nikon F-401/N4004 camera users

Read the following instructions carefully when using the SB-22 with F-401/N4004 camera.

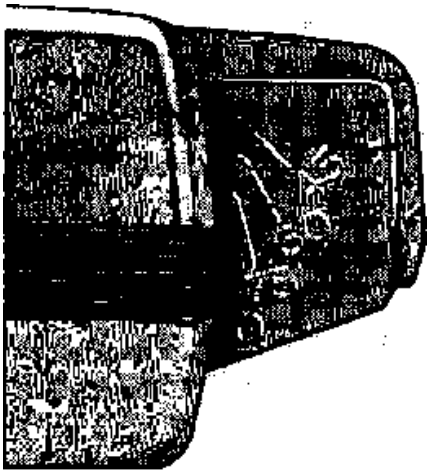
1. Nikon F-401/N4004 camera is designed for use with AF Nikkor lenses, except AF-Nikkor 80mm f/2.8, 200mm f/3.5 IF-ED and Autofocus Converter TC-16/ TC-16A.

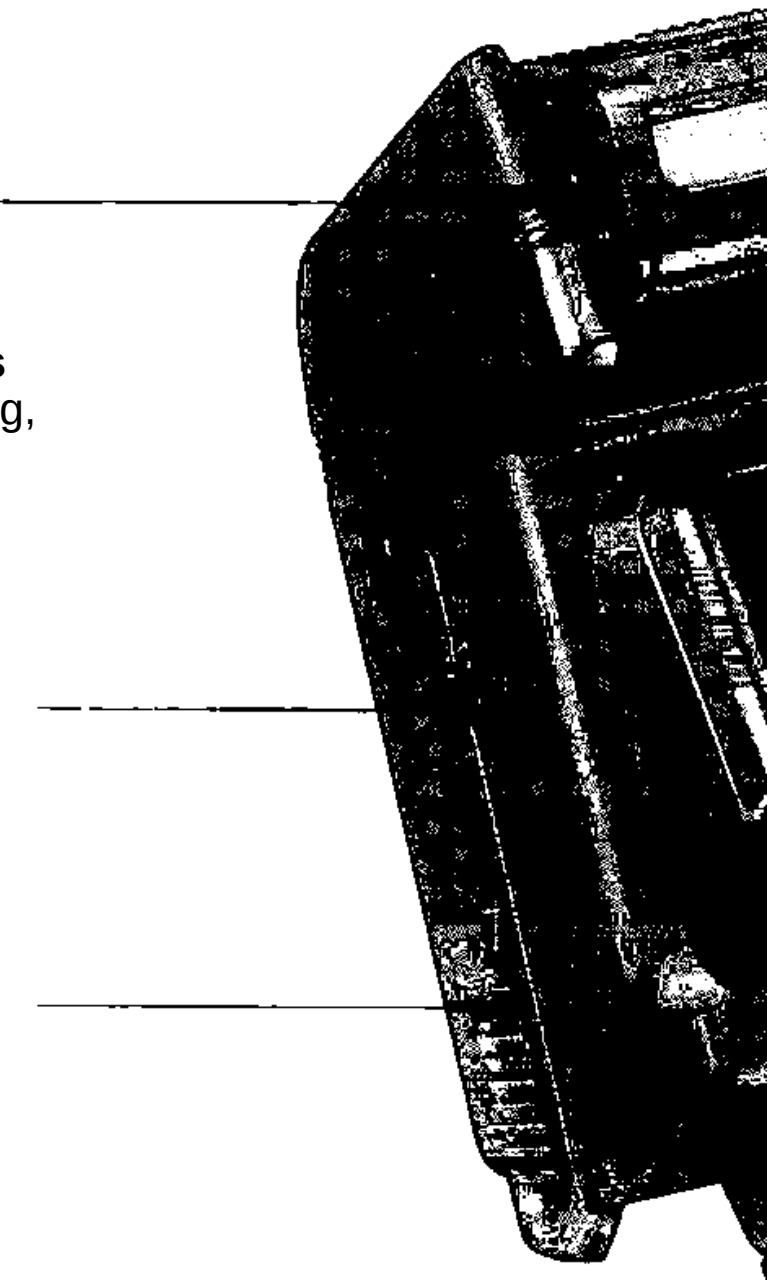
For most photos in this manual, aperture is set by rotating the lens aperture ring. With the F-401/N4004, however, aperture is set using camera's aperture dial. Do not forget to set and lock the lens at its smallest aperture.

For limited use of non-AF Nikkor lenses, see the F-401/N4004 instruction manual.

2. Most of the explanations in this manual dealing with Programmed TTL Auto Flash, TTL Auto Flash, etc., apply to shooting dark subjects. However, by setting the F-401/N4004 to program, aperture-priority or shutter-priority auto exposure mode, with the SB-22 set to TTL, automatic balanced fill-flash is possible in situations where fill-flash is effective, even with a bright subject. For details, see the F-401/N4004 instruction manual. (In **manual exposure mode,** ordinary TTL fill-flash is possible.)

NOMENCLATURE



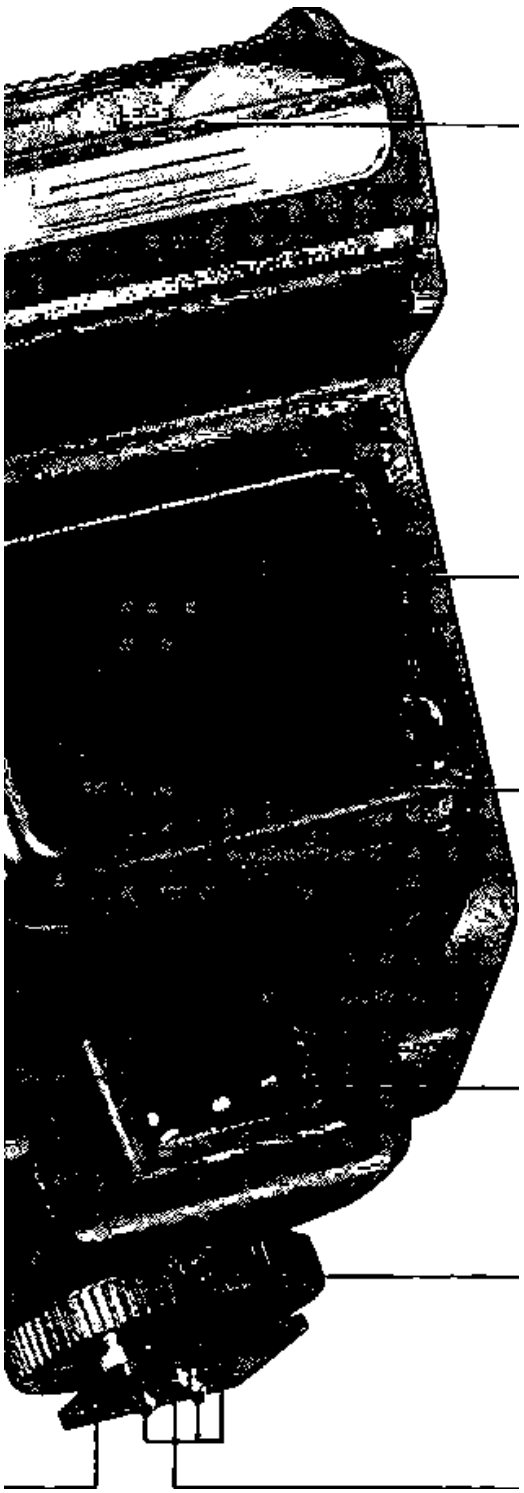


Bounce angle indicators
For bounce flash shooting, see page 41.

Battery cover indices

Battery chamber cover

Mounting foot



Flash head

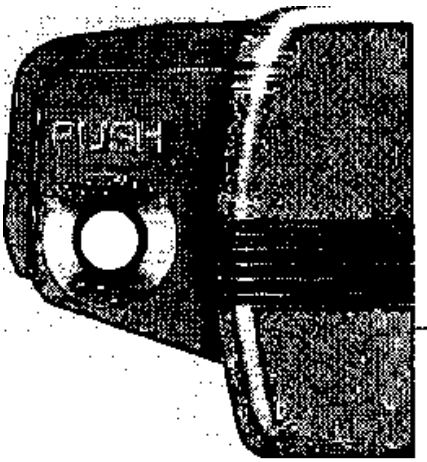
Autofocus assist illuminator LED
See pages 13 to 15.

Light sensor for non-TTL auto flash operation

External power source terminal
Accepts power cord from Nikon DC Unit SD-7.

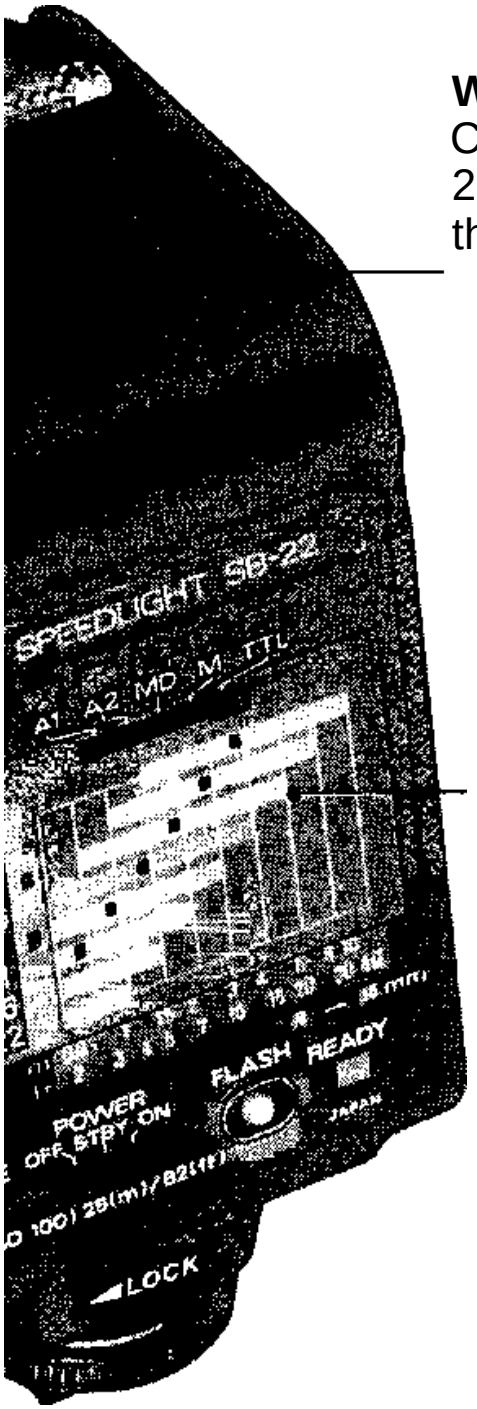
Mounting foot lock nut

Hot-shoe contacts



Wide-flash adapter lock button

Sync/multiple flash terminal
For (1) off-camera operation with a sync cord and (2) multiple flash photography in manual flash operation (page 46).



Wide-flash adapter
Covers the picture angle of lenses 28 mm or longer. Slides out and covers the flash head (see page 36).

Aperture selectIon/shooting distance range panel
See pages 17 to 31.

Before using the SB-22, peel off the protective paper covering the panel.

Aperture index windows
Used in automatic operation.

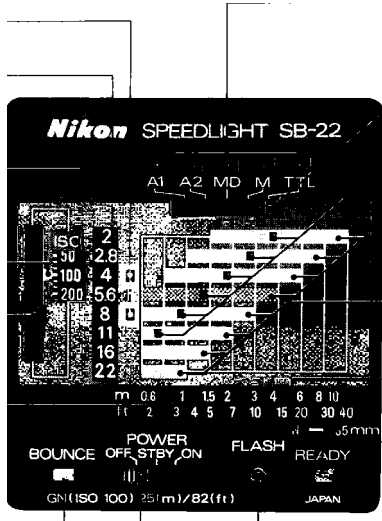
Aperture scale window

Film speed scale window

Film speed index

Film speed setting knob

Distance scale window



Bounce set indicator
Blinks when flash head is tilted.

Power switch
See page 33.

Flash mode indicators

Flash mode selector

Aperture/distance index windows for MD mode

Flash shooting distance range indicators
The patterned bar (fourth bar from the top) shows programmed TTL auto flash information.

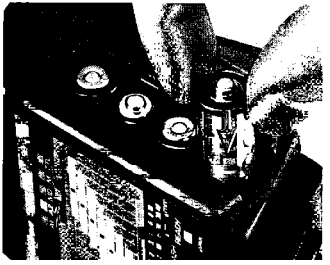
Normal (35mm)/Wide (28 mm) index windows

Ready-light
See page 34.

Open-flash button
For (1) test firing in At or A2 mode, (2) multiple flash exposure (page 42) and (3) to turn on SB-22 after it is automatically turned off (page 33).

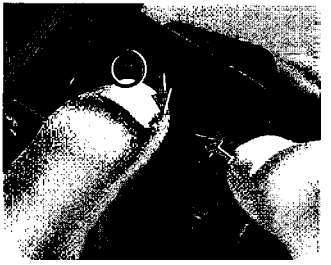
Installing Batteries

"I, Slide down the battery ' chamber cover and lift it out.



2, Load four 1.5V AA-type ' penlight alkaline-manganese or manganese batteries or 1.2 V NiCd batteries into the battery chamber.

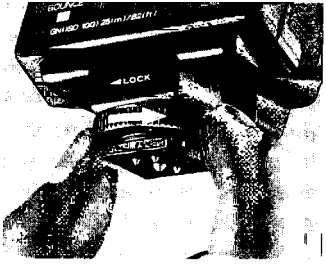
For battery information, see page 50.



0^ To reattach battery ' chamber cover, align the black indices on the cover and flash unit, then slide the cover up as far as it goes.

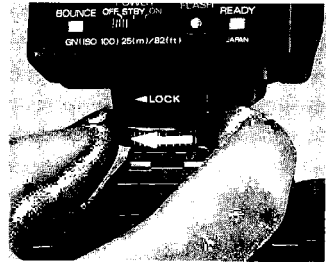
f As an external power source, Nikon DC Unit ^ I SD-7 is optionally available. See page 52. I

Attaching Flash Unit to Camera Accessory Shoe



Turn the mounting foot ‘ lock nut clockwise as far as it goes.

Slide mounting foot ' forward into the camera’s accessory shoe as far as it goes.



0_ Tighten lock nut firmly.

With Nikon FS-series cameras with DE-2 or DE-3 finder: Attach Flash Unit Coupler AS-4 or AS-7 to camera's accessory shoe before mounting the SB-22. The SB-22 cannot be mounted on F3-series camera with the other finders.

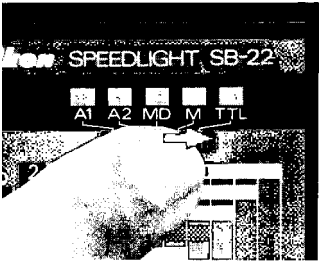
Programmed TTL Auto Flash Shooting (with Nikon F-501/N2020, F-401/N4004 or F-301/N2000)

Steps 7 through 9 provide instructions for programmed TTL auto flash shooting with the Nikon F-501/N2020*, F-401/N4004** or F-301/N2000* camera.

For other flash exposure operations (TTL auto, non-TTL auto and manual flash exposure operations) see "SETTING CAMERA SHUTTER SPEED" on page 16 and "DETERMINING APERTURE," pages 17 to 32.

** The Nikon N2020 and N2000 are sold exclusively in the U.S.A. and Canadian markets.*

*** The Nikon N4004 is sold exclusively in the U.S.A. market.*



7 **Set the SB-22's flash mode selector to TTL.**

For the flash shooting range in programmed TTL automatic operation, see the table on page 20.

The patterned bar in the middle of the flash shooting distance range indicators also shows the flash shooting range in programmed TTL automatic operation.

To read the programmed aperture, set the film speed knob. The figure at the left of the patterned bar is the programmed aperture.

For programmed TTL automatic flash operation, note the following:

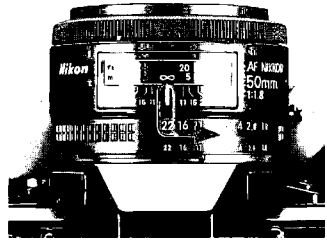
- Use AI-S type lenses only. With Nikon F-401/N4004, use only AF-Nikkor lenses, except AF-Nikkor 80mm f/2.8, 200mm f/3.5 IF-ED and Autofocus Converter TC-16/TC-16A.
- For autofocus operation, set the Nikon F-501/N2020's focus mode selector to S for Single Servo Autofocus mode, or set the Nikon F-401/N4004 to A for autofocus mode. For details, see pages 13 to 15.

With F-501/N2020

With F-301/N2000

g Set camera to a programmed exposure mode (P DUAL, P ■ or P HI for F-501/N2020; P or P HI for F-301/N2000).

With the Nikon F-401/N4004, set the camera to either **program auto** (aperture dial to S, shutter speed dial to A) or **shutter-priority auto** (aperture dial to S, shutter speed dial to desired speed) exposure mode.



0 Set lens to minimum ' aperture (largest f-number).

With AF Nikkor lenses, lock lens aperture at minimum setting. (See the lens instruction manual).

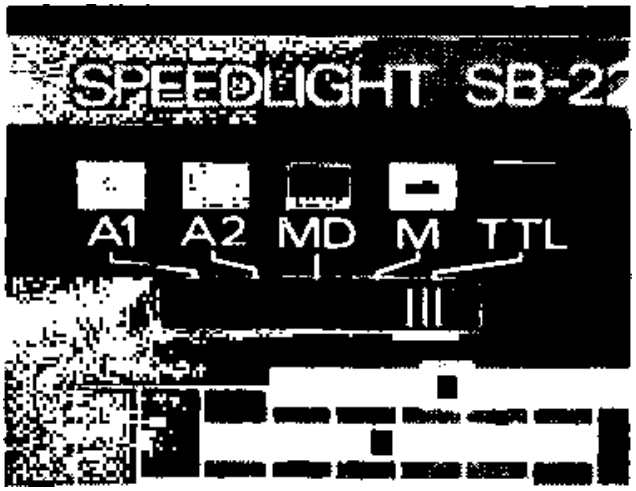
With the Nikon F-401/N4004, this procedure is unnecessary because the lens is always locked at the smallest aperture.

Flash Shooting

m 0.6 1 1.5 2
ft 2 3 4 5 7

POWER p
ICE OFF^STBY^ON

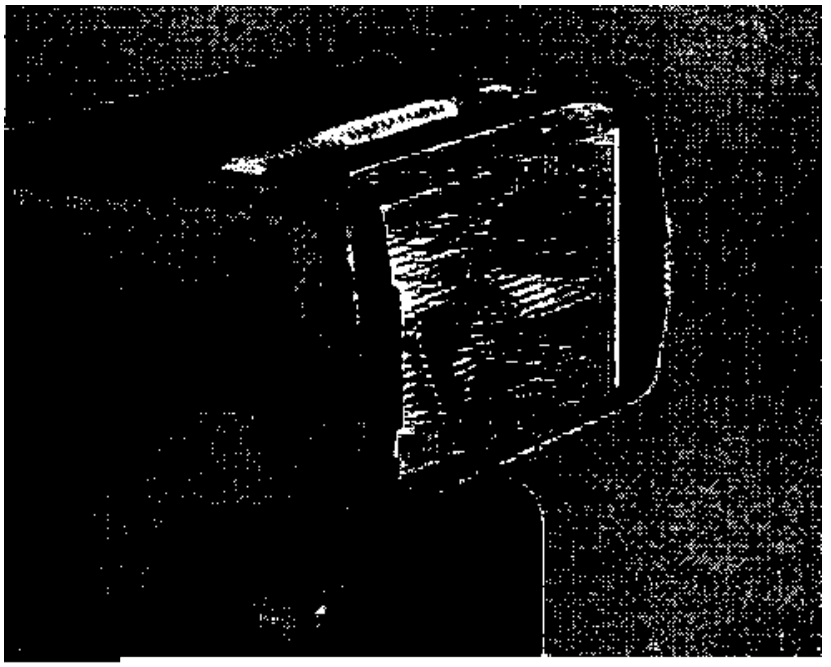
ISO 100) 26(m)/82(ft)



TTL mode is selected

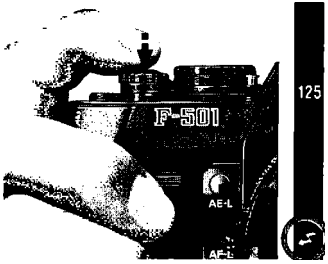
■|Q_Set power switch to STBY (standby ' position) to turn on SB-22.

LED indicating selected flash mode immediately lights up.



11. Make sure bounce angle is set at 0°

If the flash head is tilted, the bounce set Indicator blinks. For bounce flash photograph, see page 41.



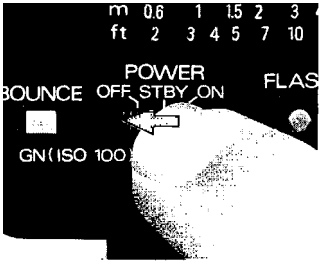
■^2.Lightly press shutter ‘release button and viewfinder ready-light comes on to indicate flash is ready to fire.

For blinking ready-light warnings, see page 35.

13. Fully depress shutter ' release button to take picture.

Unless viewfinder ready-iight blinks after the shot, your flash exposure will be perfect; if it does blink, picture may be underexposed—move closer to subject.

^ Do not fire flash toward or • near the eyes; it may damage the retina.

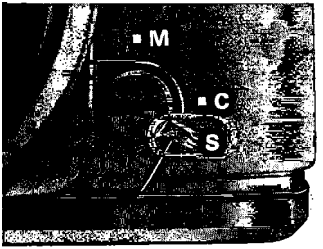


■|4.Turn off the SB-22.

AUTOFOCUS FLASH PHOTOGRAPHY (with Nikon F-501/N2020 or F-401/N4004)-

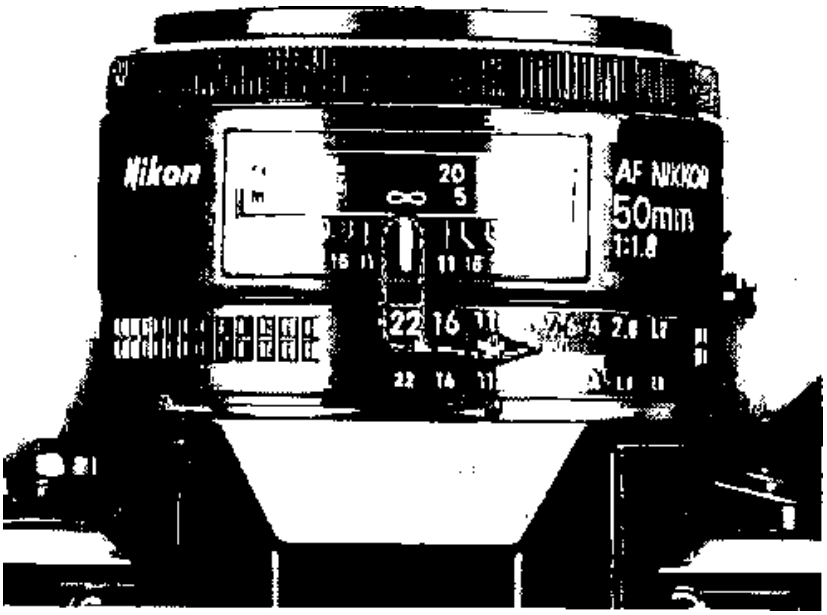
In programmed TTL autofocus flash photography, use film with a film speed specified in the table below for greater depth of field:

	Lens maximum aperture	Film speed
Lens only	f/2.8or faster	ISO 50 or higher
	Slower than f/2.8	ISO too or higher
F-501/ N2020 with TC-16A	f/1,4 or f/1.2	ISO 50 or higher
	f/1.8. f/2, f/2.5or f/2.8	ISO too or higher



Set the Nikon F-501/N2020's focus mode selector to S for Single Servo Autofocus mode, or set the F-401/N4004 to A for autofocus mode.

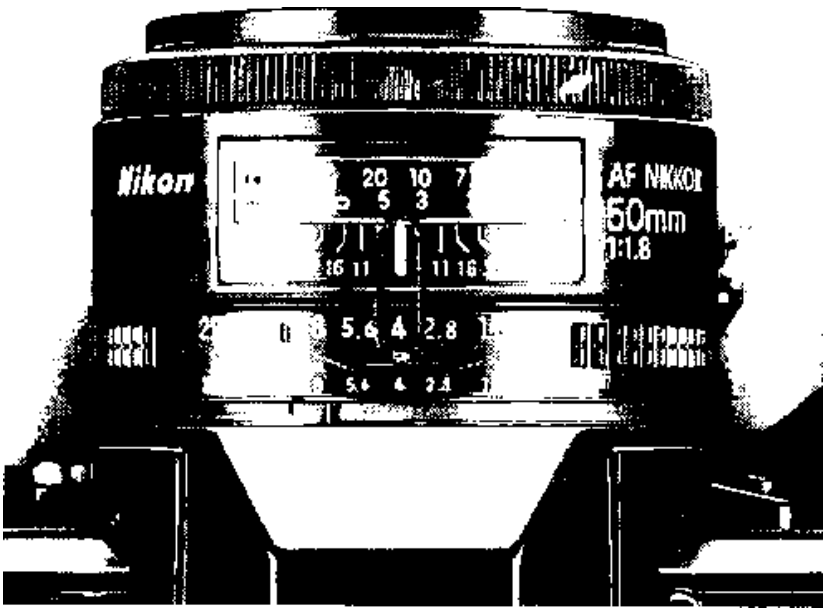
Continuous Servo Autofocus cannot be used for autofocus flash photography.



2_ Set aperture.

With Nikon F-401/N4004, use camera's aperture dial. Don't forget to lock lens at minimum position.

For programmed TTL operation, set to smallest lens aperture (largest f-number) and lock the lens aperture. (For details, see the lens instruction manual).



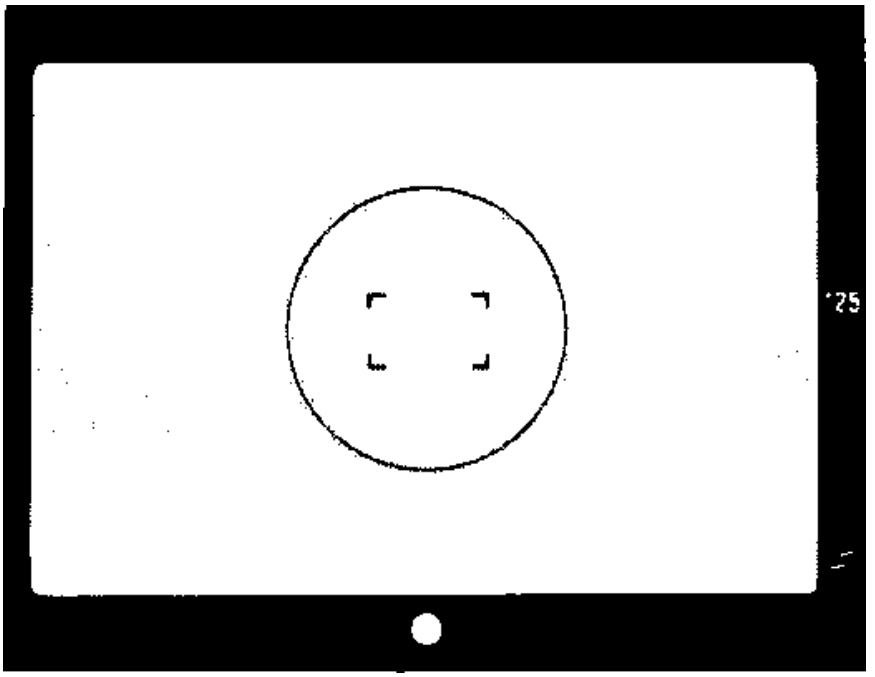
For other flash operations, set as follows:

	Lens maximum aperture	Aperture setting
Lens only	f/2.8 or faster	f/2.8 or larger f-number (f/2.8, f/4, f/5.6, etc.)
	Slower than f/2.8	f/5.6 or larger f-number (f/5.6, f/8, f/11,etc.)
F-501/ N2020 with TC-16A	f/1.4 or f/1.2	f/2 or larger f-number (f/2, f/2.8, f/4, etc.)
	f/1.8, f/2, f/2,5or f/2.8	f/4 or larger f-number (f/4, f/5.6, f/8, etc.)

3 Lightly press camera shutter release ■ button.

When ready-light comes on but ambient light is insufficient for autofocus operation, AF illuminator fires to start autofocus operation.

If ambient light is sufficient, the AF illuminator does not fire.



^ Confirm whether the green in-focus ' indicator LED iights up, then fuliy depress the shutter reiease button.

If focus-not-possible indicator LED (x) remains lit when using the Nikon F-501/N2020, or if focus indicator LED (•) blinks with Nikon F-401/N4004, autofocus flash photography is impossible. Focus manually on the clear matte field.

SETTING CAMERA SHUTTER SPEED

Set camera's shutter speed, referring to the table below.

As shown in the table, automatic sync speed setting is available with most Nikon cameras.

Nikon camera	Synchronization speed (sec.)	Camera setting		Running shutter speed (sec.)	Viewfinder shutter speed indication
F-501/N2020* F-301/N2000*	1/125 Of Slower	POUAL(F-501/N2020only),P,PHI		1/125	125 lights up
		A, 1/2000−1/250sec.		1/125	125 lights up and LED for proper non-flash shutter speed blinks
		1/125->1sec. andB		as set	LEO for manually set shutter speed lights up and LED for proper non-flash shutter speed blinks: no indication at B
F-401/N4004	1/100 or slower	Shutter dial	Aperture dial		
		A	S	1/100	—
		A	1.4-32		—
		1/2000-1/125 sec.	S		—
		1/60-1 sec.	S	as set	—
		I/2000-I/I25sec.	1.4-32	1/100	—
		1/60- Isec, and B	1.4-32	as set	—
FA		All shutter speed settings except M250 and B in P, S and A modes		1/250	LCD shows 250
		1/4000- 1/500sec, in M mode		1/250	LCD shows M250
		1/250- Isec. in M mode		as set	LCD shows manually set shutter speed
		M250and B in P, S, A and M modes**		as set	No indication
FE2	1/250 or slower	A, 1/4000-1/500 sec.		1/250	—
		1/250-8sec.		as set	-
		M250 andB**		as set	—
FG	1/90 or slower	P.A. 1/1000-1/125S6C.		1/90	Two LEDs representing 1 /90sec. light up
		1/60-Isec		as set	LED for manually set shutter speed lights up
		M90 and B**		as set	No indication
F3-series (via AS-4 or AS-7 coupler)	1/80 or slower	A		1/80	LCD shows 80
		1/2000-1/125sec.		1/80	LCD shows M80
		1/60−8sec. X. BandT		as set	LCD shows manually set shutter speed, no indication at B or T
FM2	1/250 or slower	1/250-1 sec. and B		as set	—
FG-20	1/90 or slower	A, ((* , 1/1000-1/125sec.		1/90	-
		1/60−1sec., M90andB		as set	-

**In TTL mode, programmed TTL auto flash operation will be performed with theAI-S type lens and F-501/N2020or F-301/N2000 set at programmed auto exposure mode.*

'Improper for programmed TTL auto flash operation and TTL auto flash operation.

DETERMINING APERTURE----------

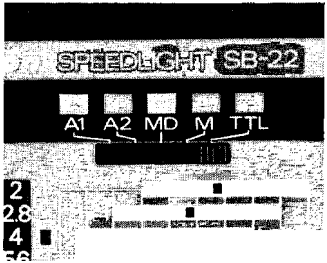
TTL Mode
(for TTL Automatic Flash Exposure Control)

TTL mode is for exclusive use with Nikon F-501/N2020, F-401/N4004, F-301/N2000, FA, FE2 and FG cameras *only.*
For TTL auto flash operation with the Nikon F-501 /N2020, F-401 /N4004 or F-301/N2000, be sure to set the camera to *aperture priority auto or manual exposure mode.*

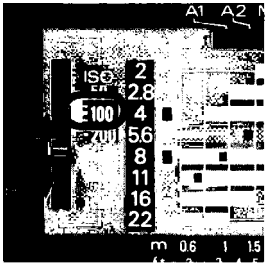
For correct exposure in TTL mode, use film with a film speed specified in the table below:

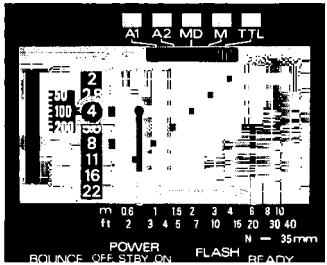
Camera	Film speed
F-501/N2020 and F-301/N2000	ISO 25 to 1000
F-401/N4004, FA, FE2 and FG	ISO 25 to 400

To determine aperture with the SB-22's aperture selection/shooting distance range panel for TTL auto flash operation, read the following:
(For programmed TTL auto flash operation, see pages 9 to 10.)



Set SB-22's mode selector 'to TTL.





2. Align film speed in use 'with the fiim speed index.

Note: *Lines between the numbers on the film speed scale represent intermediate settings. (See illustration.)*

32
40'
64
80
125,
160
250
320
500
640'
1000
1250

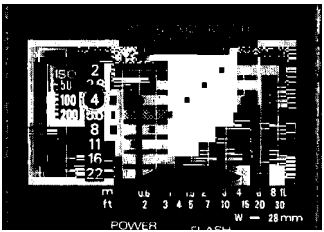
25
50
"100
200
400
16oa

3_ Seiect and set aperture.

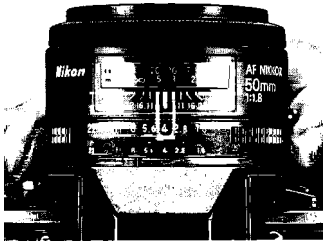
The aperture scale window shows usable apertures. (Depending on film speed in use, all usable apertures may not be shown in the aperture scale window; for usable apertures, see table on page 20.)

For example, with the film speed index at ISO 100, you can select any aperture from f/2 to f/22. Selecting f/4 lets you take pictures of subjects 0.8m to 6.2m (approx. 2.6ft. to 30ft.) away.

Ifl



The shooting distance scaie changes when the wide-fiash adapter is used. For example, selecting f/4 lets you take pictures of subjects 0.6 m to 4.4 m (approx. 2.0ft. to 14ft.) away. See page 36.



4 Set your chosen aperture.

' With Nikon F-401/N4004, use camera's aperture dial.

Next, turn on flash unit and take shot in the same manner shown in “BASIC OPERATION,” steps 10 to 14.

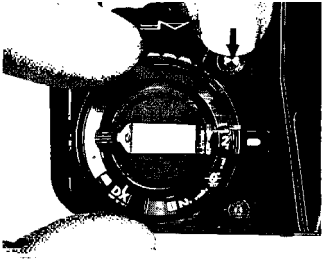
Usable apertures/shooting distance range in TTL mode

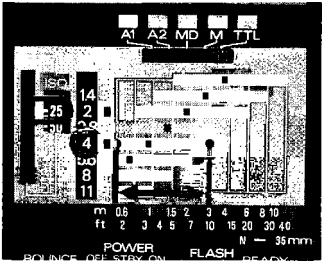
Unit: m (ft)

	ISO film speed							Shooting distance range	
	1000*	800*	400	200	100	50	25	Normal	With wide-flash adapter
O (/>	2.8 + '/3	2.8	2	_	_	_	_	3.2-20(10-66)	2.2-17(7.2-56)
	4 + >/3	4	2.8	2	—	_	_	2.2-17(7.2-56)	1.6-12(5.2-39)
	5.6+ '/3	5.6	4	2.8	2	_	_	1.6-12(5.2-39)	1.1-8.8(3.6-29)
	8 + '/3	8	5.6	4	2.8	2	—	1.1-8.8(3.6-29)	0.8-6.2(2.6-20)
	11 +>/3	11	8	5.6	4	2.8	2	0.8-6.2(2.6-20)	0.6-4.4 (2.0-14)
	16 + >/3	16	11	8	5.6	4	2.8	0.6-4.4 (2.0-14)	0.6-3.1 (2.0-10)
	22 + >/3	22	16	11	8	5.6	4	0.6-3.1 (2.0-10)	0.6-2.2(2.0~7.2)
	—	—	22	16	11	8	5.6	0.6-2.2(2.0-7.2)	0.6-1.5(2.0-5.0)
	_	—	—	22	16	11	8	0.6-1.5 (2.0-5.0)	0.6-1.1 (2.0-3.6)
	_	—	—	—	22	16	11	0.6-1.1 (2.0-3.6)	0.6-0.7(2.0-2.3)

'For Nikon F-501/N2020 and F-301/N2000 only.

I I = Programmed TTL auto flash information.





Exposure compensation in TTL mode

With a dark subject (with low reflectivity) or one that is light in tone (having high reflectivity), over- or under-exposure may occur. To prevent this, compensate exposure by rotating camera's exposure compensation dial. With the FG, push the exposure compensation button. (For details, see camera instruction manual.)

The shooting distance range for TTL automatic flash operation varies with the amount of exposure compensation. For comperisated distance range, see table at right, then reset film speed setting on the back of SB-22.

For example, with ISO 100 film and camera's exposure compensation dial set at -i-2, read 25 on the table and reset the SB-22's film speed index to 25.

With an aperture of f/4, the flash shooting distance range—which is 0.8m to 6.2m (2.6ft. to 20ft.) at ISO 100—shifts to 0.6m to 3.1 m (2.0ft. to 10ft.) at ISO 25. The Nikon F-401/N4004 has no exposure compensation dial, and compensates exposure with automatic balanced fill-flash.

Exposure compen- ^ ^tion value / Film speed In use ^	+ 2	+1	0	-1	-2
25			25	50	100
50		25	50	100	200
100	25	50	100	200	400
200	50	100	200	400	800*
400	100	200	400	800'	
800*/1000*	200	400	800'		

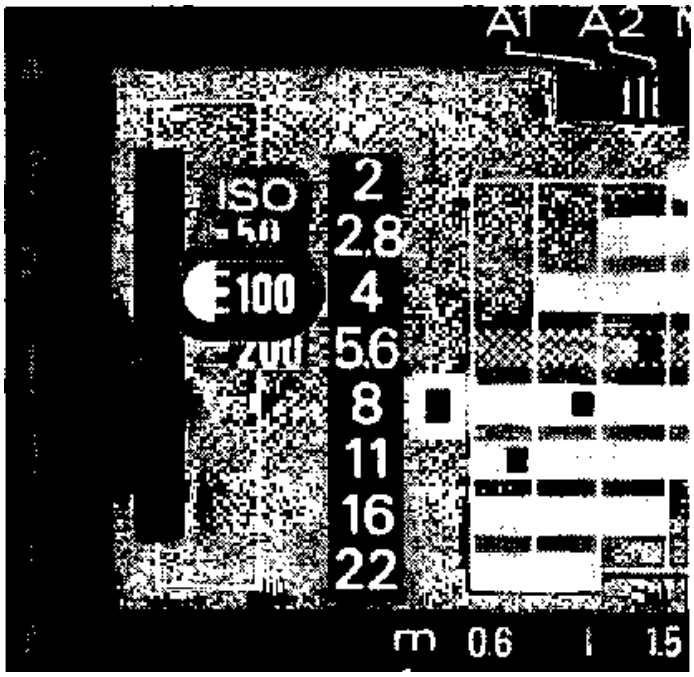
-For Nikon F-501/N2020 and F-301/N2000 only.

Not possible: make the necessary compensation in the non-TTL automatic mode (see the following) or shoot on manual.

A1 or A2 Mode (for Non-TTL Automatic Flash Exposure Control)

Use the SB-22 on A1 or A2 mode for automatic operation with Nikon Cameras other than Nikon F-501/ N2020, F-401/N4004*, F-301/N2000, FA, FE2 and FG. The following procedure lets you select aperture with the SB-22's aperture selection/shooting distance range panel for non-TTL auto flash operafion.

**Non-TTL automatic operation is not possible when Nikon F-401/N4004 is set to either program or shutter-priority auto exposure mode.*

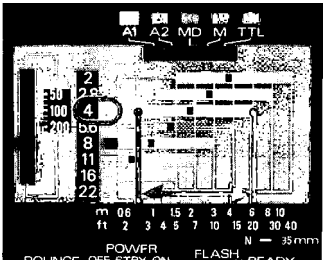


_ Align film speed in use with film speed ' index.

Note: *Lines between the numbers on the film speed scale represent intermediate settings. (See illustration.)*

32\

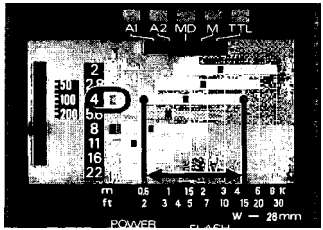
64^-25
80s
125v
160-
' vrlOO
-200
250-
320^-E400
500 0/E 800
640'^- 16oo
1000^
1250/



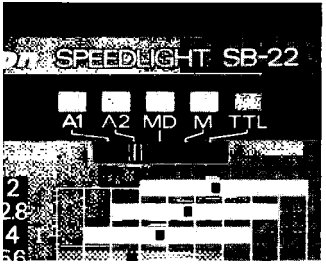
2,Select appropriate aperture

The aperture index windows show usable apertures. With the film speed index at ISO 100, for example, you can select either aperture f/4 or f/8.

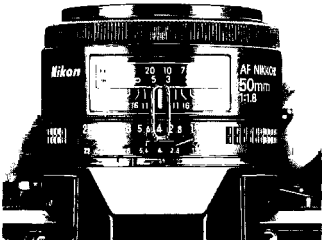
If you select f/4, you can take pictures of subjects 0.8m to 6.2m (approx. 2.6ft. to 20ft.) away.



The shooting distance scale changes when the wide-flash adapter is used. For example, if you select f/4, you can take pictures of subjects 0.6 m to 4.4 m (approx. 2.0ft. to 14ft.) away. See page 36.



3,Set SB-22's mode selector 'to A1 or A2 according to the selected aperture.



^ Set your chosen aperture.

' With Nikon F-401/N4004, use camera's aperture dial.

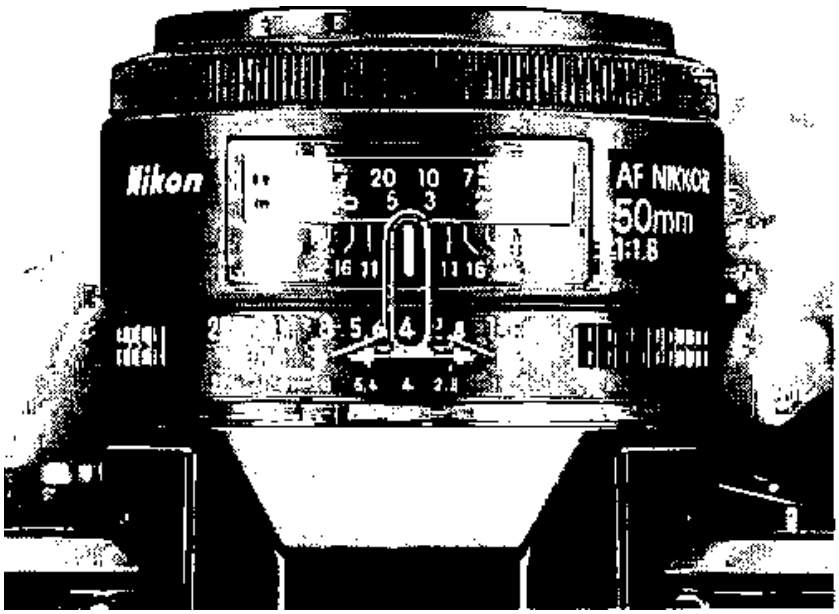
Next turn on flash unit and take shot in the same manner shown in "BASIC OPERATION," steps 10 to 14.

Shooting distance range in A1 or A2 mode

Regardless of the film speed and the corresponding f/stop available at At or A2, the auto shooting range is as shown in the following table.

Auto shooting range

Selector mode	Normal	With wide-flash adapter
At	0.6-3.1 m	0.6-2.2m
A2	0.8-6.2m	0.6-4.4m



Exposure compensation in A1 or A2 mode

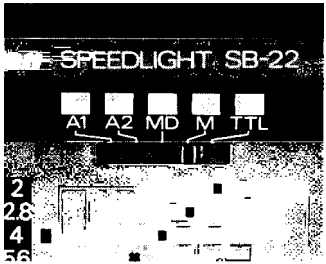
With a dark background (one with low reflectivity) or one that is light in tone (having high reflectivity), over- or underexposure may occur. To prevent this, compensate exposure by stopping down or opening aperture. With a dark background, stop down the aperture 1/2 to one full f/stop; when the background is light in tone, open the aperture 1/2 to one full f/stop.

With the Nikon F-401/N4004, set aperture using the camera's aperture dial.

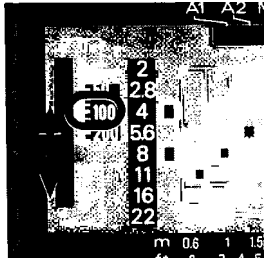
M Mode (for Manual Flash Exposure Control)

In M mode, the SB-22 fires at its maximum light output regardless of the flash-to-subject distance.

To determine aperture with the SB-22's aperture selection/shooting distance range panei for manual flash operation, read the following.



Set the SB-22's flash mode selector to M.

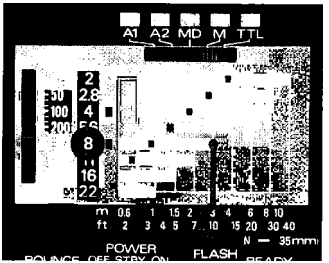


2 Align film speed in use ' with the film speed index.

Note: *Lines between the numbers on the film speed scale represent intermediate settings. (See illustration.)*

32\

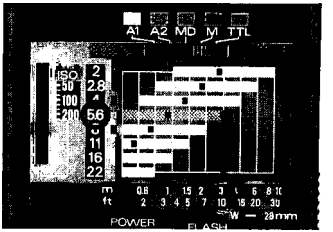
320 :400
500^ 800
640//'-1600
IOOQ/
125q /



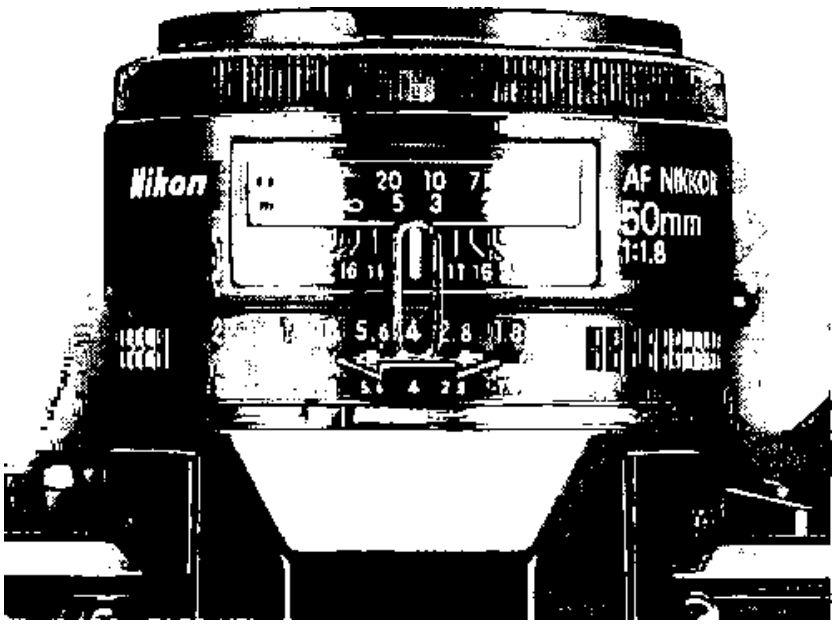
3, **Choose aperture.**

Determine the shooting distance and follow the appropriate vertical line upward from the distance scale until it meets the right edge of one of the distance range indicators. Then follow the distance range indicator horizontally and you can find the appropriate aperture. For example, with film speed index set at ISO 100, and if you want to shoot a subject 3 m away, use f/8.

You can also determine aperture using the SB-22's guide number (GN). For details, see page 32.



The shooting distance scale changes when the wide-flash adapter is used. For example, if you want to shoot a subject 3 m away, use f/5.6. See page 36.



Set your chosen aperture.

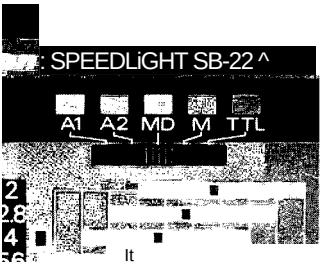
With Nikon F-401/N4004, use camera's aperture dial.

Next, turn on flash unit and take shot in the same manner shown in “BASiC OPERATiON," steps 10 to 14.

MD Mode (for Manual Flash Exposure Control with Motor Drive Operation)

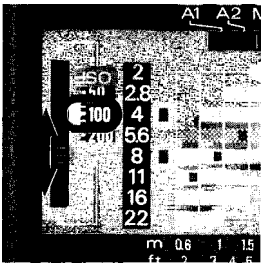
At the motor drive (MD) setting, the SB-22 is able to recycle fast enough to synchronize with a motor-driven camera firing continuously up to 6 frames per second. It is possible to take up to four full flash pictures in rapid succession in this way.

To determine aperture with the SB-22's aperture selection/shooting distance range panel in this mode, read the following.



It

_ **Set the SB-22's flash mode selector to MD.**

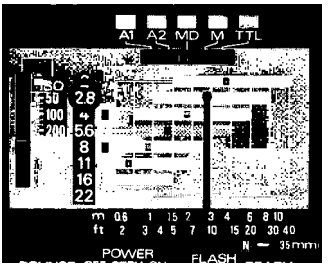


2,Align film speed in use 'with the film speed index.

Note: *Lines between the numbers on the film speed scale represent intermediate settings. (See illustration.)*

32\

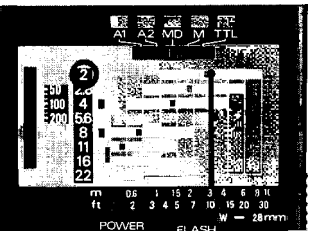
125$^^ |“ ИÔÔ
160- :200
250—E' 400
ЗгО'^1 800
ЬПО-У- 1600
640^- 1000"
1250'



3, **Choose aperture.**

Determine the shooting distance and follow the appropriate vertical line upward from the distance scale until it meets one of the aperture/distance index windows for MD mode on the distance range indicators. Then follow the distance range indicator horizontally and you can find the appropriate aperture. For example, with film speed index set at ISO 100, and if you want to shoot a subject 3 m away, use f/2.

You can also determine aperture using the SB-22's guide number (GN). For details, see page 32.



The shooting distance scale changes when the wide-flash adapter is used. For example, if you want to shoot a subject 3 m away, use f/2. See page 36.

^ Set your chosen aperture.

With Nikon F-401/N4004, use camera's aperture dial.

Next, turn on flash unit and take shot in the same manner shown in “BASIC OPERATION,” steps 10 to 14.

The maximum number of flashes for continuous shooting are listed below.

Batteries	Maximum number of liashes*	Frames per second
AA-type alkaline-manganese batteries inside SB-22	4	6fps
AA-type alkaline-manganese batteries inside SB-22 plus C-type alkaline-manganese batteries inside optional DC Unit SD-7**	t o	6fps
	40***	4.2fps

** Don't begin the continuous sequence until the ready-light has been lit for approx. 30 seconds (with fresh batteries at20°C[68°F]).*

*** For details about the SD-7, see page 52,*

**** More flashes possible, but never fire the flash more than 40 times. Before firing the flash again, let it rest for at least 10 minutes.*

Note: *In M or TTL automatic modes, or A1/A2 modes (non-TTL automatic modes), do not fire the flash more than 10 frames without allowing the flash to rest at least 10 minutes. Even lor fewer flashes, be sure to allow the SB-22 a few minutes to rest. Using the flash continuously without cooling causes malfunction.*

Guide Number

In M or MD mode, without referring to the aperture selection/shooting distance range panel, you can determine the f/stop by using the following equation:

$$\text{f/stop} = \frac{\text{guide number}}{\text{flash-to-subject distance}}$$

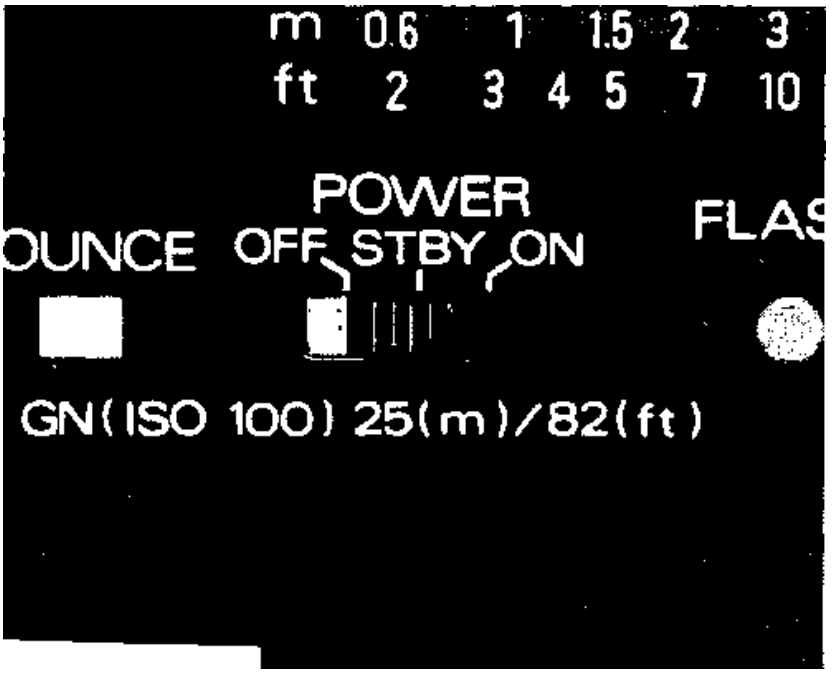
See the table for guide numbers at various film speeds.

Guide number at various film speeds

Unit; m (ft)

		Normal		With wide-flash adapter	
Mode selector		M (manual)	MD	M (manual)	MD
o	1600	100(328)	32(105)	70(230)	22 (72)
	800	70(230)	22 (72)	50(164)	16(52)
	400	50(164)	16(52)	35(115)	11 (36)
	200	36(118)	11 (36)	25 (82)	8(26)
	too	25 (82)	8(26)	18(59)	5.6(18)
	50	18(59)	5,6(18)	12.5(41)	4(13)
	25	12.5(41)	4(13)	9(30)	2.8 (9)

SETTING POWER SWITCH



STBY (STANDBY) Position

Use to conserve energy and shorten recycling time.

With Nikon F-501/N2020, F-401/N4004, F-301/ N2000, FA, FE2and FG:

Use the SB-22's STBY position to turn on the SB-22. In STBY position, when the camera's meter turns off, in one or two minutes the SB-22 turns off automatically. To turn the SB-22 on again, lightly press the camera's shutter release button.

Note: *When the Nikon FA or FE2 is connected to Nikon Motor Drive MD-12 via a remote cord, the camera's meter stays on and the SB-22 remains on at STBY position.*

With other cameras:
Though the ON position is normally recommended for turning on the flash unit, STBY can also be used.
With other Nikon cameras, even if the camera's exposure meter stays on, the SB-22 automatically turns off when not used for one or two minutes. To turn on again, set power switch to ON or OFF position, then reset to STBY, For convenience, you may also push the open-flash button to turn on the SB-22,

ON Position

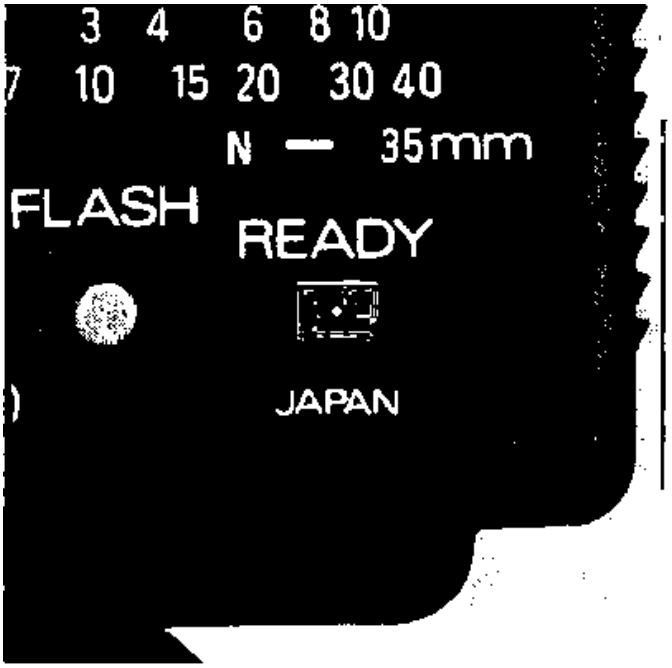
With cameras other than the Nikon F-501fN2020, F-401/N4004, F-301/N2000, FA, FE2 and FG:
This position is normally used to turn on the SB-22,

With the Nikon FA, FE2, and FG:
To turn on the SB-22 when using mechanical shutter settings (M250, M90 or B), set power switch to ON,

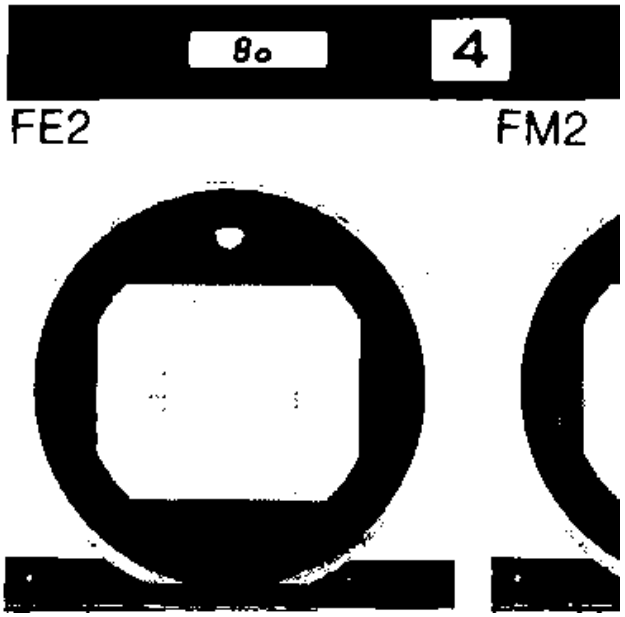
OFF Position

When not using the flash unit, *always* set the power switch to OFF position.

READY-LIGHT INDICATIONS

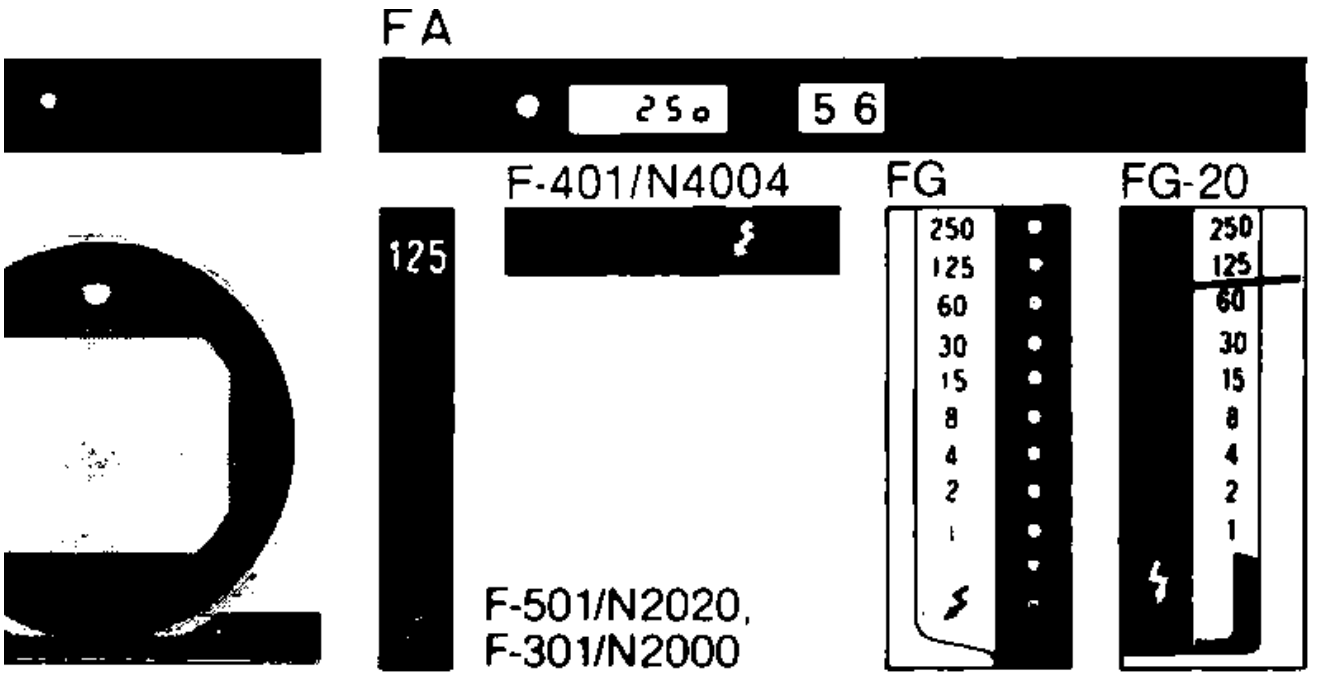


F3-series



When the flash unit is turned on, the SB-22's ready-light lights up to indicate the flash is ready to fire.

To activate the vie\«tinder ready-light function when using the Nikon FA, FE2, F-501/N2020, F-401/N4004, F-301/N2000, FG or FG-20, first turn on the camera’s meter by lightly pressing the shutter release button.



With alkaline-manganese batteries, if the ready-l takes more than 30 sec. to light up, replace the teries with a fresh set.

Ready-Light Warning Functions

To prevent errors, the ready-light inside the camera's viewfinder blinks in the cases listed below. When blinking occurs, check the SB-22's flash mode selector setting, the camera's shutter speed/mode selector setting or film speed setting and adjust as necessary.

1) When SB-22 is set at TTL with cameras other than Nikon F-501/N2020, F-401/N4004, F-301/N2000, FA, FE2 or FG.

   Reset SB-22's flash mode seiector to A1, A2 or M.

2) When using the FA, FE2, or FG to perform TTL automatic flash photography with the camera's shutter speed .dial set at a mechanical setting (M250, M90 or B). Reset shutter speed dial to another shutter speed setting. For M250, M90 or B setting, reset SB-22's flash mode selector to At, A2 or M.

3) When performing programmed TTL auto or TTL auto flash operation with a camera film speed setting beyond the usable range. Use film within the appropriate range for TTL auto flash photography (ISO 25 to 400 with the F-401/N4004, FA, FE2 or FG; ISO 25 to 1000 with the F-501/N2020 or F-301/N2000). With thé FA, ready-light also blinks when the film speed setting on the camera is near ISO 12.

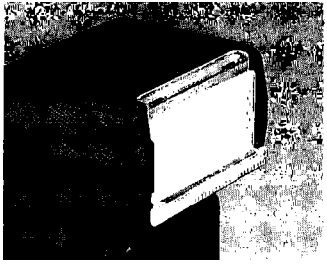
4) When shutter speed set on the FE or FM2 is faster than the flash sync speed. Set the shutter speed to the flash sync speed or slower one.

5) With the Nikon F-401/N4004, when the built-in flash and SB-22 are OFF, and when the camera detects flash is effective, the ready-light in the camera's viewfinder blinks when the shutter release button is lightly pressed.

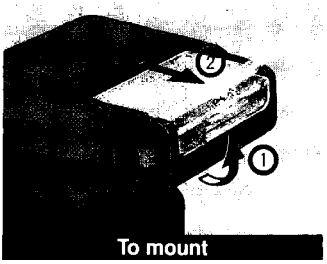
With the SB-22 in TTL, A1 or A2 mode, if both viewfinder ready-light and SB-22 ready-light blink after taking pictures (to warn that lighting might have been insufficient for correct exposure), confirm subject is within the flash shooting distance range and,- if necessary, use a wide aperture or move closer to the subject. With the Nikon F-401/N4004, for scenes where the background is extremely bright, the ready-light may not blink after the shot, even if flash is insufficient for correct exposure.

With weak batteries, ready-lights blink to indicate insufficient flash power, even if the subject is within the shooting distance range; replace batteries with a fresh set.

USING WIDE-FLASH ADAPTER

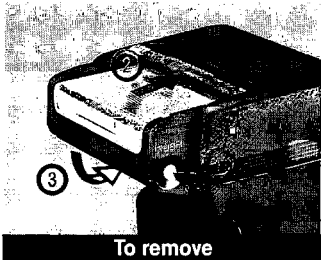


The angle of illumination of the SB-22 covers the picture angle of a 35 mm lens. When the wide-flash adapter stored in the flash head is set, it increases the angle of coverage, allowing the SB-22 to be used with a 28 mm lens. When the wide-flash adapter is used, the guide number is reduced to 18 (ISO 100 and meters) or 9 (ISO 25 and meters), and the shooting distance range for automatic operation changes. With the sliding movement of the wide-flash adapter, the distance scale changes accordingly.



To mount

Tilt the flash head to the 90° position. Slide out the wide-flash adapter to cover the flash head. Turn the flash head to its original position.



To remove

Tilt the flash head to the 90° position. Then, while pushing the wide-flash adapter lock button, slide the wide-flash adapter into the pocket. Turn the flash head to its original position.

SYNCHRO-SUNLIGHT FILL-IN FLASH PHOTOGRAPHY-

For backlit subjects, to till in shadows and balance lighting, use the SB-22 even in daytime.

in the foiiowing, use a slower shutter speed to avoid a dark background.

Without flash:
The backlit subject comes out too dark.

With flash:
Both the subject and the background come out properly exposed.

By setting the F-401 / N4004 to program, aperture-priority or shutter-priority auto exposure mode, with the SB-22 set to TTL, automatic balanced fill-flash is possible in situations where fill-flash is effective, even with a bright subject. For details, see the F-401/N4004 instruction manual. (In **manual exposure mode,** ordinary TTL fill-flash is possible.)

In TTL Mode

1. Set the camera shutter speed manually to a flash synchronization speed or slower speed.
2. Frame the background in the camera viewfinder, turn on the camera's exposure meter to determine aperture for a correct background exposure, then set the aperture on the lens.
3. Set the flash mode selector to TTL, turn on the SB-22 and take the shot.

With a strongly backlit subject (e.g., scene which includes the sun), it may be difficult to obtain desired exposure balance. In this case, use the SB-22 in M mode.

Note: *Do not use programmed TTL flash operation for fill-in flash photography.*

In A1 or A2 Mode

1. Determine correct aperture for the backlit subject (according to method on page 23) by referring to the SB-22's aperture selection/distance range panel, then set both the aperture index and the aperture on the lens.
2. Frame the background in the camera viewfinder and turn on camera meter to determine proper shutter speed for the aperture set on the lens. The shutter speed must be equal to or slower than the flash sync speed—without a proper shutter speed you cannot perform fill-in flash photography in At or A2 mode.
3. Set the shutter speed from step 2 on camera's shutter speed dial.
4. Set the flash mode selector to At or A2, turn on the flash unit and fake fhe shof.

With a strongly backlit subject, perform fill-in flash photography in M mode.

In M Mode

1. Manually set the camera shutter speed to a flash synchronization speed or slower speed.

2. Frame the background In the camera's viewfinder, then turn on the camera's exposure meter to read proper aperture for correct background exposure, and set the aperture on the lens.

3. Calculate the flash-to-subject distance using the equation below and set the SB-22 at the calculated distance.

$$\text{fiash-to-subject} = \frac{\text{guide number*}}{\text{f/stop}}$$

* For guide number, see page 32.

4. Set the SB-22's flash mode selector to M, turn on the flash unit and take the shot.

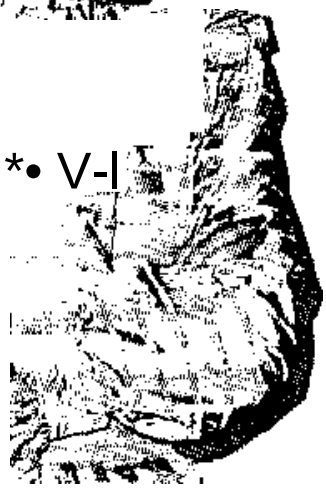
To eliminate harsh shadows caused by ambient daylight, decrease flash illumination by one or two f/stops using one of the methods below,

1. Use an aperture one or two f/stops smaller than that determined in step 2 in combination with a shutter speed slower by one or two steps.
2. Use a flash-to-subject distance from 1.4 to two times longer than that determined using the equation in step 3.

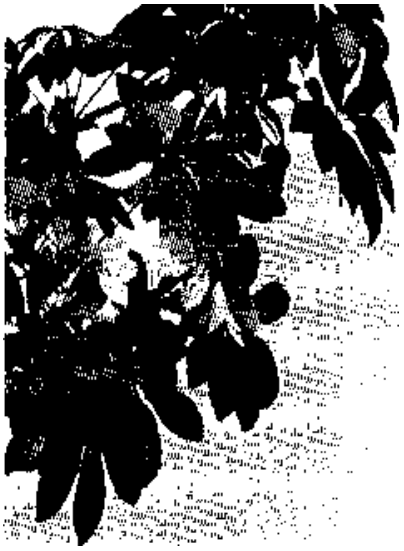
DIFFUSING THE LIGHT-

fi'i

*• V-l



i;



A

*' 'j

V,

Diffused light eiiminates harsh shadows and creates attractive portraits. There are two ways to diffuse iight;

1. Bounce iight off a broad reflective surface such as the ceiling;
2. Use a diffuser between the fiash and the subject.

Direct flash: Harsti, unflattering lighting.

Bounce flash: Soft, natural looking lighting.

Bounce Flash Photography Procedure

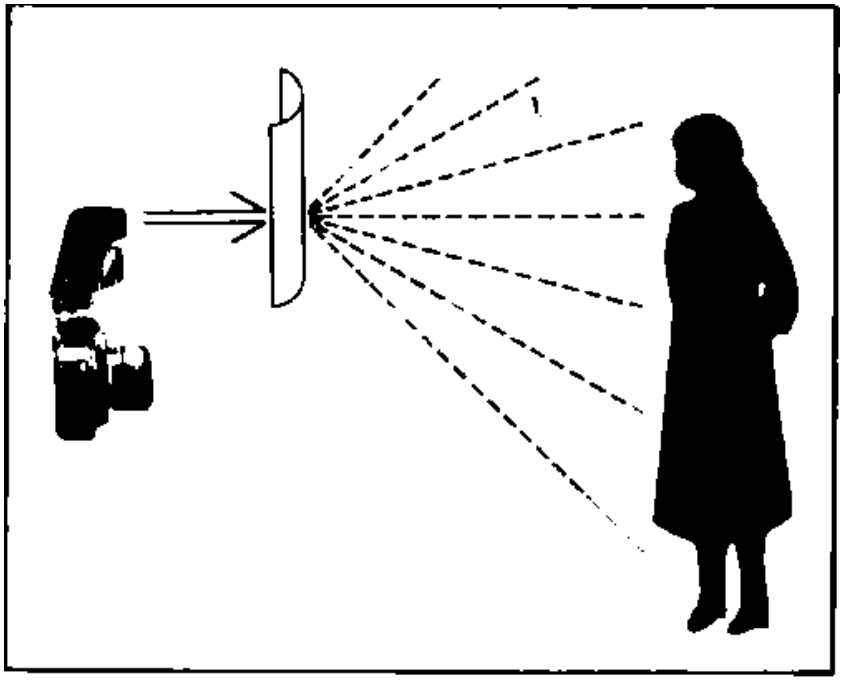
1. Select a ceiling to bounce the flash from. In color photography, select a white or silver ceiling—otherwise, color photographs come out with an unnatural color cast similar to that of the reflecting surface.

2. Tilt the flash head upwards, towards the ceiling. To avoid uneven illumination, tilt flash head back 60° or more.

3. Set flash mode selector to TTL for TTL auto flash operafion, At or A2 for non-TTL aufo flash operafion, then turn on the flash unif. The bounce indicator blinks.

4. Choose an aperture and perform a test firing. If the ready-light blinks after test firing, indicating under-exposure may occur at the aperture set on the lens, use a wider aperture or reduce the bounce distance and test fire the flash again.

5. Bracket your exposures. You are recommended to take additional shots with the camera's exposure compensation dial set in the -t- or - direction (not possible with Nikon F-401/N4004) for TTL auto flash operation or with the lens opened up or stopped down one or two f/stops for non-TTL auto flash operation.

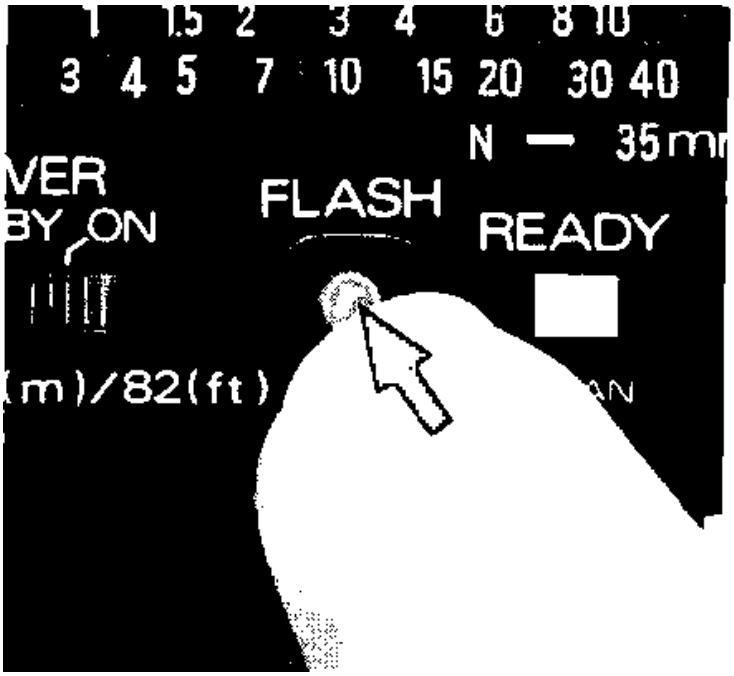


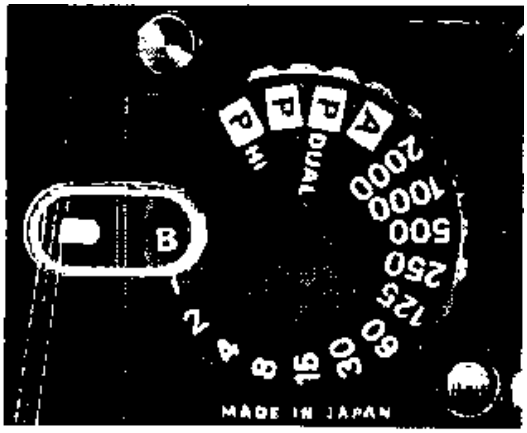
Using A Diffuser

Place a translucent material, such as one or more sheets of tracing paper, between the flash and subject to diffuse light. It is recommended that you experiment with different flash-to-diffuser distances and/or more than one diffuser.

Use the SB-22 on TTL or M mode when using a diffuser.

MULTIPLE FLASH EXPOSURES





To create multiple-exposure "stroboscopic" effects or paint the scene with light, use the following procedure:

1. Disconnect the flash unit from the camera body.

2. Set the camera at B (bulb).

3. Push the open-flash button repeatedly—as many times as desired.

TTL Multiple Flash Photography

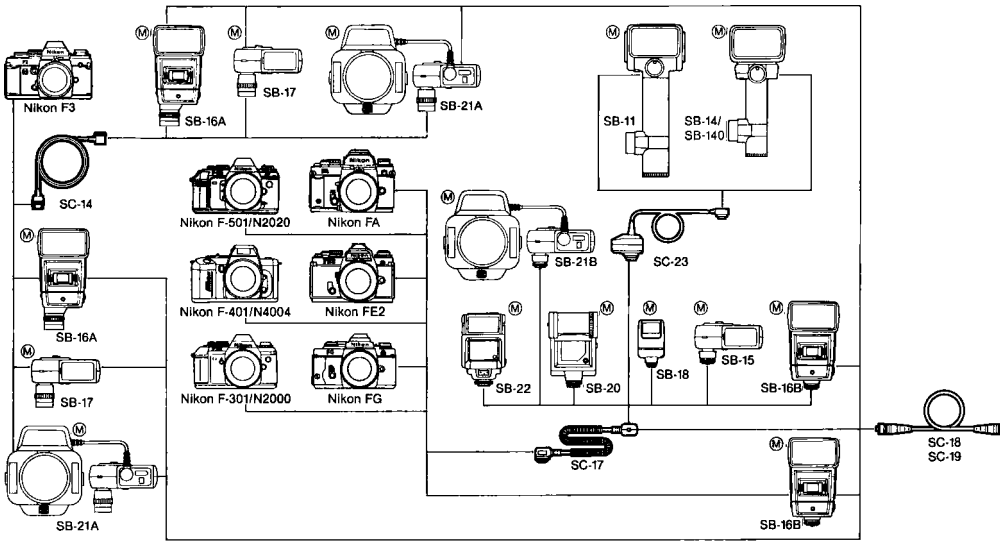
Use the Nikon Speedlight SB-22, SB-20, SB-18, SB-16B or SB-15 connected to an F-501/N2020, F-401/N4004, F-301/N2000, FA, FE2 or FG camera as a master flash unit; and use either the SB-22, SB-21 B, SB-20, SB-18, SB-17, SB-16A, SB-16B and/or SB-15 as slave flash unit(s). Up to five flash units can be used.

For TTL multiple flash photography, use the optional TTL Multi-Flash Sync Cord SC-18 (1.5m) and/or SC-19 (3m) to connect the flash units via the TTL multiple flash terminal. Because the SB-22, SB-21 B, SB-20, SB-18 and SB-15 are not provided with a TTL multiple flash terminal, it is necessary to use TTL Remote Cord

SC-17 when using these flash uhits as a master flash unit. To use the SB-22, SB-20, SB-18 and/or SB-15 as slave flash units, use the AS-10. When using the SB-140, SB-14 and/or SB-11 for TTL multiple flash photography, you should also use TTL Remote Cord SC-23. With the Nikon F-401/N4004, programmed TTL auto flash and TTL auto flash are not possible with the SB-11/14/140 (even with the SC-23) or SB-21. They cannot be used for TTL multi-flash either, even as a slave flash unit.

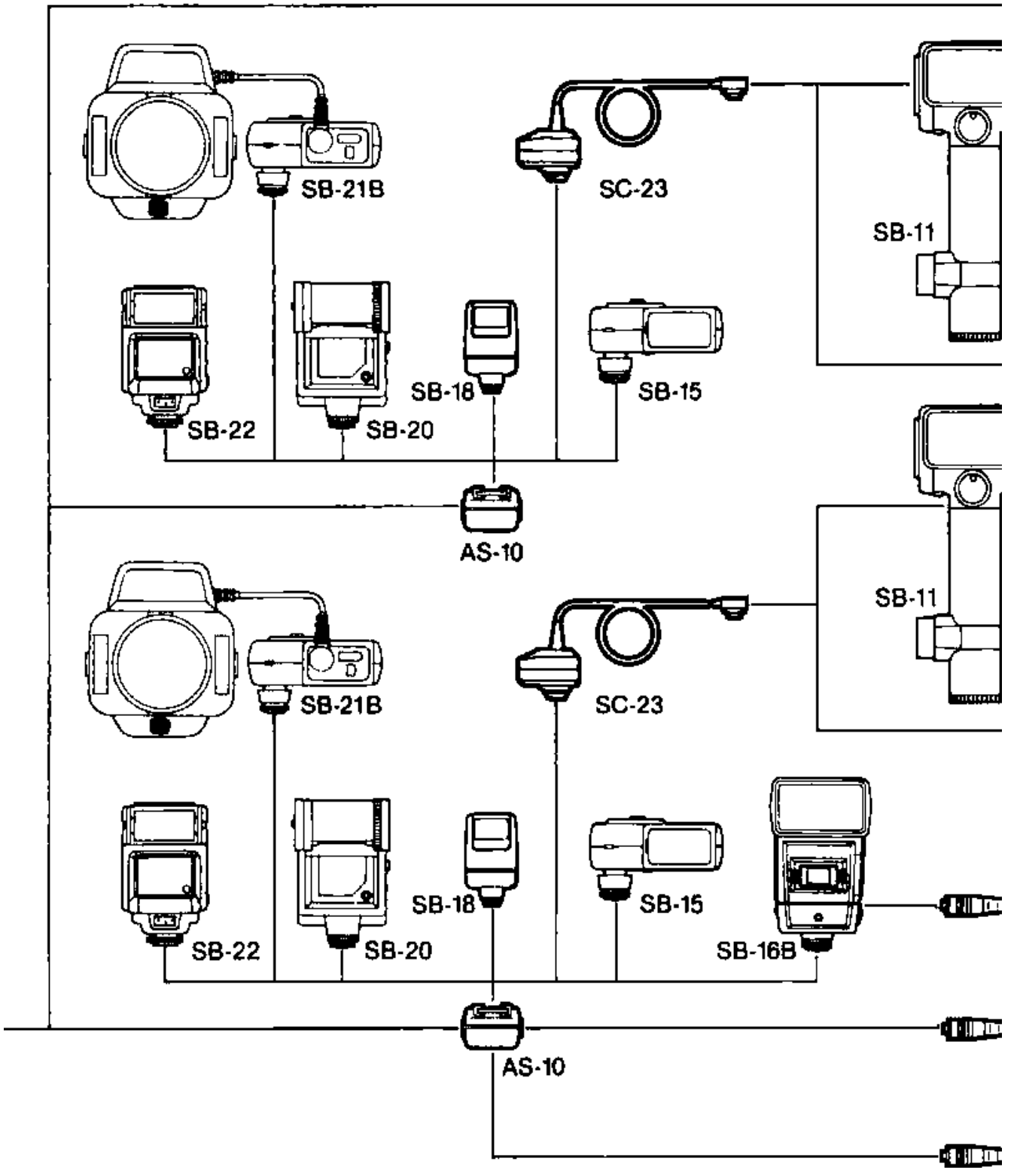
See the system chart on the next page.

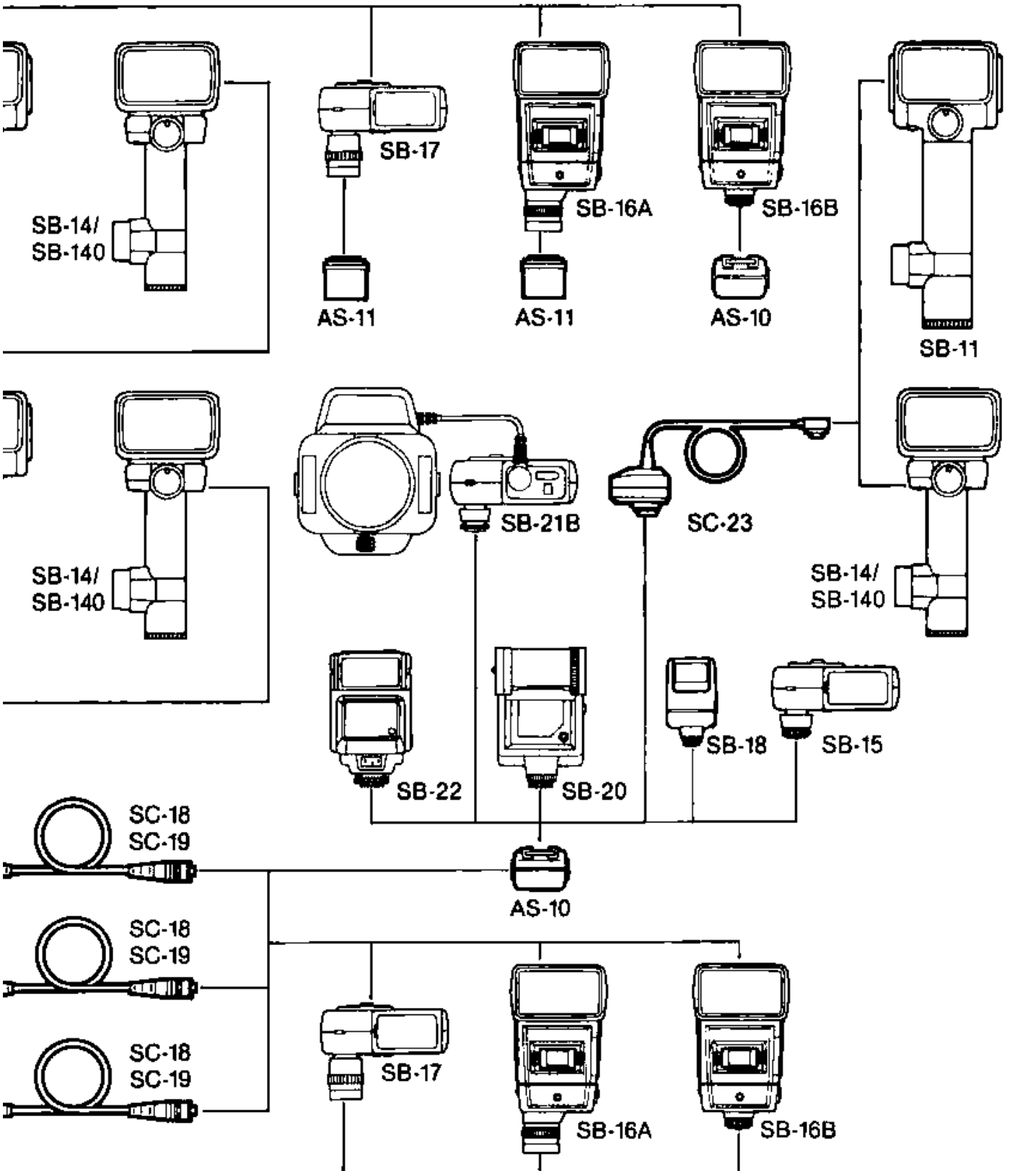
System chart for TTL multiple flash operation



Ⓜ indicates the "master" flash unit.

*The SB-11, SB-14, SB-140 and SB-21B cannot be used with Nikon F-401/N4004 either as a master or slave flash unit.


SB-21B
SC-23
SB-11
SB-22
SB-20
SB-18
SB-15
AS-10
SB-21B
SC-23
SB-11
SB-22
SB-20
SB-18
SB-15
SB-16B
AS-10


SB-14/
SB-140
SB-17
AS-11
SB-16A
AS-11
SB-16B
AS-10
SB-11
SB-14/
SB-140
SB-21B
SC-23
SB-14/
SB-140
SB-22
SB-20
SB-18
SB-15
SC-18
SC-19
AS-10
SC-18
SC-19
SC-18
SC-19
SB-17
SB-16A
SB-16B

Manual Multiple Flash Photography

Connect the SB-22 and other flash units with the optional Nikon Sync Cord SC-11 or SC-15 via the SB-22's multiple flash terminal.

For correct exposure in manual multiple flash operation, be sure all flash units are set at manual flash mode.

Caution

To avoid damaging the flash units or incorrect operation, never mix Nikon Speedlight with flash units of other manufacturers.

AVOIDING “RED EYE’^

"Red eye” is a common phenomenon in flash photography where the center portions of a subject's eyes appear as bright red orbs in color photographs, or white In black-and-white pictures.

To avoid "red eye," take any or all of the following precautions:

- Ask the subject not to look directly into the lens when the picture is taken.
- Using a sync cord or TTL Remote Cord SC-17, remove the flash unit from the camera and hold it as far away from the camera as possible.
- Increase the overall room illumination to reduce opening of the subject’s pupils.

CLOSE-UP FLASH PHOTOGRAPHY IN TTL MODE

When used with the Nikon F-501/N2020, F-401/N4004, F-301/N2000, FA, FE2 or FG cameras, the optional TTL Remote Cord SC-17 lets you perform flash shooting with a subject closer than 0.6m,

1. Use the SC-17 to connect the SB-22 and camera. (See SC-17 instruction manual.)

2. Position the SB-22 and tilt the flash head down so light from the flash head covers the subject.

3. Regardless of the lens in use, use the wide-flash adapter.

4. To determine aperture, use the following equation:

$$\text{f/stops} \quad \frac{A}{\text{flash-to-subject distance}}$$

where A corresponds to the film in use according to the table below:

ISO film speed	25	32	40	50	64	80	100	125	160	200	250	320	400	500*	640*	800*	1000*
A	2	2,2	2,5	2.8	3.2	3.5	4	4.4	5	5.6	6.3	7.1	8	8.9	10.1	11	13

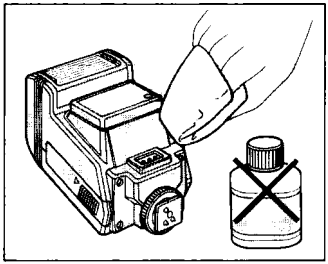
*For *F-501/N2020 and F-301/N2000 only.*

If you are using ISO 100 film for example, and the flash-to-subject distance is 0.5m, divide 4 by 0.5 to get f/8. That means you can use an aperture of f/8 or smaller. Use as small an aperture as possible.

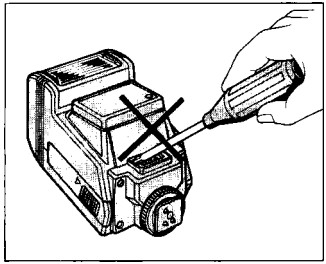
5. Set the flash mode selector to TTL, turn on the SB-22 and take the shot.

With very light- or dark-toned subjects, make exposure compensation with the camera's exposure compensation dial.

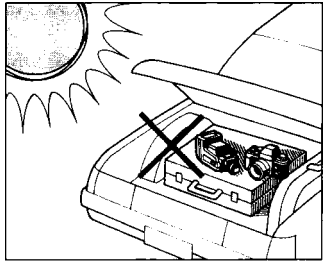
TIPS ON SPEEDLIGHT CARE



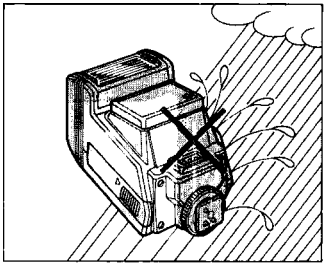
>To remove smudges, wipe with a dry soft or silicon-treated cloth. Never use thinner, benzine or alcohol—they might damage plastic parts.



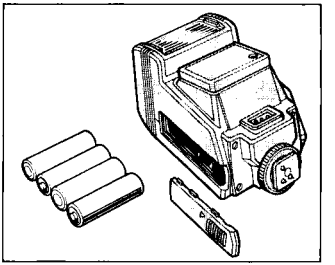
• Never disassemble or repair the flash unit; if the SB-22 malfunctions, take it immediately to an authorized Nikon dealer or service center.



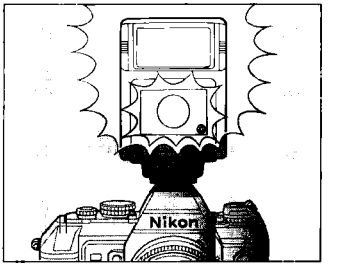
• Keep the SB-22 away from places where temperature is higher than 50°C, and do not store in damp places. Use within the range of -10°C~-I-50°C.



•Keep the SB-22 away from salt water and out ot the rain.



• When not using the SB-22, remove batteries to avoid damage due to battery leakage. If leakage occurs, take the SB-22 to your nearest Nikon authorized service facility.



• When the SB-22 is not used, perform the following once a month:

1. Install batteries, turn on the SB-22 and fire flash a few times.

2. Wait until the ready-light comes on.

3. Turn off the SB-22, and remove the batteries.

ABOUT BATTERIES----------

New batteries

Purchase the new (freshest) batteries possible.

Temperature

Battery life ratings are based on operation at 20°C (68° F). At other temperatures, battery life is shortened. For low temperature operation, keep spare batteries and if possible, use NiCd batteries.

Continuous use

Batteries are drained much more quickly by continuous use than by intermittent use.

Storage

store batteries in a cool, dry place below 20°C (68°F).

Battery brand

Do not mix battery brands or model numbers, or new and old batteries.

Disposal

Do not dispose of batteries by burning, and never disassemble batteries.

NiCd batteries

In comparison with regular batteries, NiCd batteries provide faster recycling time and better efficiency at low temperatures.

Before charging NiCd batteries, thoroughly read instructions for batteries and battery charger.

'Batteries with a "-t- " *terminal that exceeds 6mm m diameter cannot be used.*

ACCESSORIES----------

Sync Cords SC-11 and SC-15

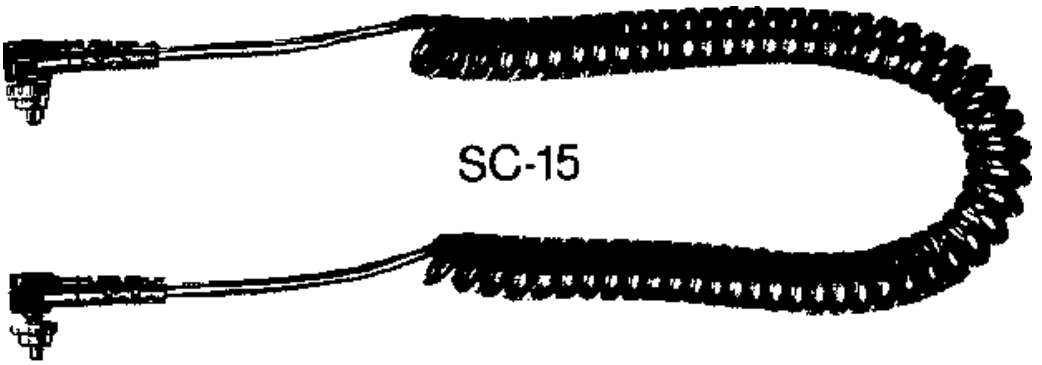
For off-camera or manual multiple lighting setups or to connect the SB-22 to a camera without a hot shoe use sync cord SC-11 (25 cm long) or coiled sync cord SC-15 (one meter long).

TTL Remote Cord SC-17

For programmed TTL auto flash operation or TTL auto flash operation when using the SB-22 oft the Nikon F-501/N2020, F-401/N4004, F-301/N2000, FA, FE2 or FG camera, use coiled cord SC-17. The SC-17 ensures automatic sync speed setting and ready-light view-finder indication just as if the flash unit were directly mounted on the camera. Comes with two TTL multiple flash terminals and one tripod socket.

TTL Multi-Flash Adapter AS-10

When using the SB-22, SB-20, SB-18 or SB-15 as a slave flash unit or when using more than three flash units, use the AS-10. Comes with three multiple flash terminals and one tripod socket.



SC.,7 ^

AS-10

TTL Multi-Flash Sync Cords SC-18 and SC-19

Use the SC-18 or SC-19 to connect flash units in TTL multiple flash operation. The SC-18 is approx. 1.5m long: the SC-19 is approx. 3m.

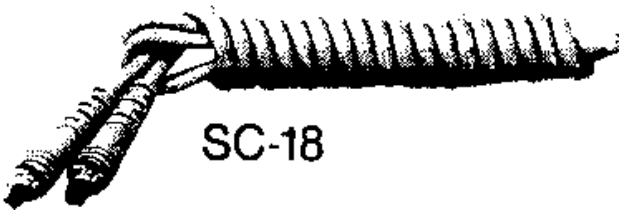
Flash Unit Couplers AS-4 and AS-7

To mount the SB-22 on a Nikon F3-series camera with the DE-2 or DE-3 finder, use the AS-4 or AS-7. The AS-7 lets you change film without removing the flash unit.

DC Unit SD-7

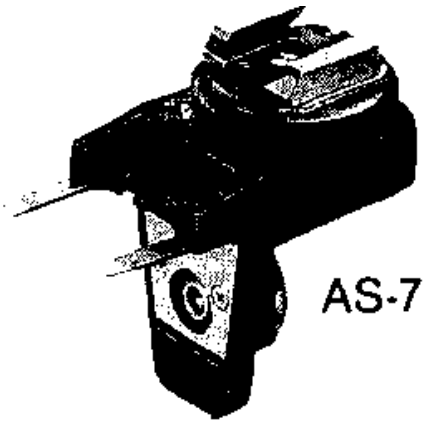
The Nikon DC Unit SD-7 is an optional external power source. To use it, connect the SD-7's power cord SC-16 to the SB-22's external power terminal. Even when powered with the SD-7, the SB-22 still requires batteries inside the flash unit—*do not remove the batteries.*

SC-19

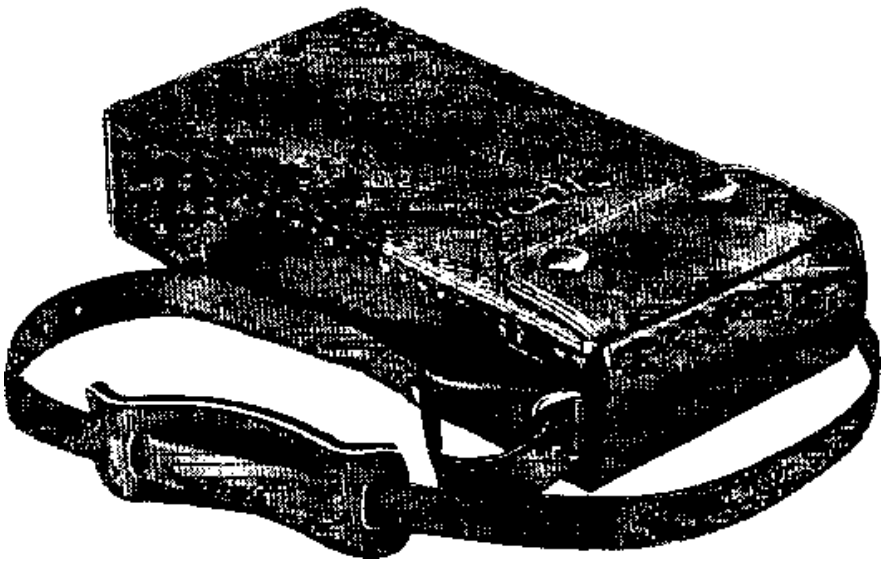


SC-18

AS-4



AS-7



SD-7

SPECIFICATIONS

All performance dala are for normal-temperature operation [20°C(68°F)1

Electronic construction Automatic silicon-controlled rectifier and series circuitry

Guide number 25 (ISO too and meters);
18 (with wide-flash adapter)
41 (ISO 25 and feet);
30 (with wide-fiash adapter)

Angie of coverage

	Horizontal	Vertical	Usable lens
Normal	60°	45°	35mm or longer
With wide-tlash adapter	70“	53°	28mm or longer

Bounce capability Flash head can be tilted down to -7° or up to 90°

Flash duration Approx. 1/1700sec. (at M setting) or 1/8000 sec. (at MD setting)

Power source Four 1.5 V AA-type alkaline-manganese, manganese or NiCd batteries; optional Battery Pack SD-7 holding six C-type batteries is available as an external power source

Power switch Three positions are provided —OFF, STBY (for standby) and ON; at STBY position with the Nikon F-501/N2020, F-401/ N4004, F-301/N2000, FA, FE2 or FG, SB-22 turns off auto-matically when flash unit is not used for one or two minutes and turns on when camera exposure meter is on

Number of flashes and recycling time at manual full light output

Battery type	Number of flashes (approx.)*	Recycling time (approx.)
AA-type alkaline-manganese	200 times	4 sec.
AA-type manganese	55 times	8 sec.
AA-type NiCd	70 times	3sec.
C-type alkaline-manganese inside the optional SD-7**	Up to t00 times	2 sec.
	Up to 300 times	3sec.
	Up to 600 times	30sec.

** For autofocus operation assisted by the AF iiiuminator, iess number of ftashes avaiiabte.*

** * With four AA-type alkaline-manganese batteries instaiied in the SB-22.*

Flash exposure control
Five flash modes are provided; TTL, A1, A2, M and MD

TTL mode
Used only with Nikon F-501/ N2020, F-401/N4004, F-301/ N2000, FA, FE2 or FG; for programmed TTL auto tiash operation (with F-501/N2020, F-401/ N4004 or F-301/N2000) or TTL auto flash operation; light is measured through the lens

Usable film speed range in TTL mode
ISO 25 to 1000 with Nikon F-501/N2020 and F-301/N2000 or ISO 25 to 400 with Nikon F-401/N4004, FA, FE2 and FG

Usable aperture range in TTL mode
f/2 to f/22 (at ISO 100)

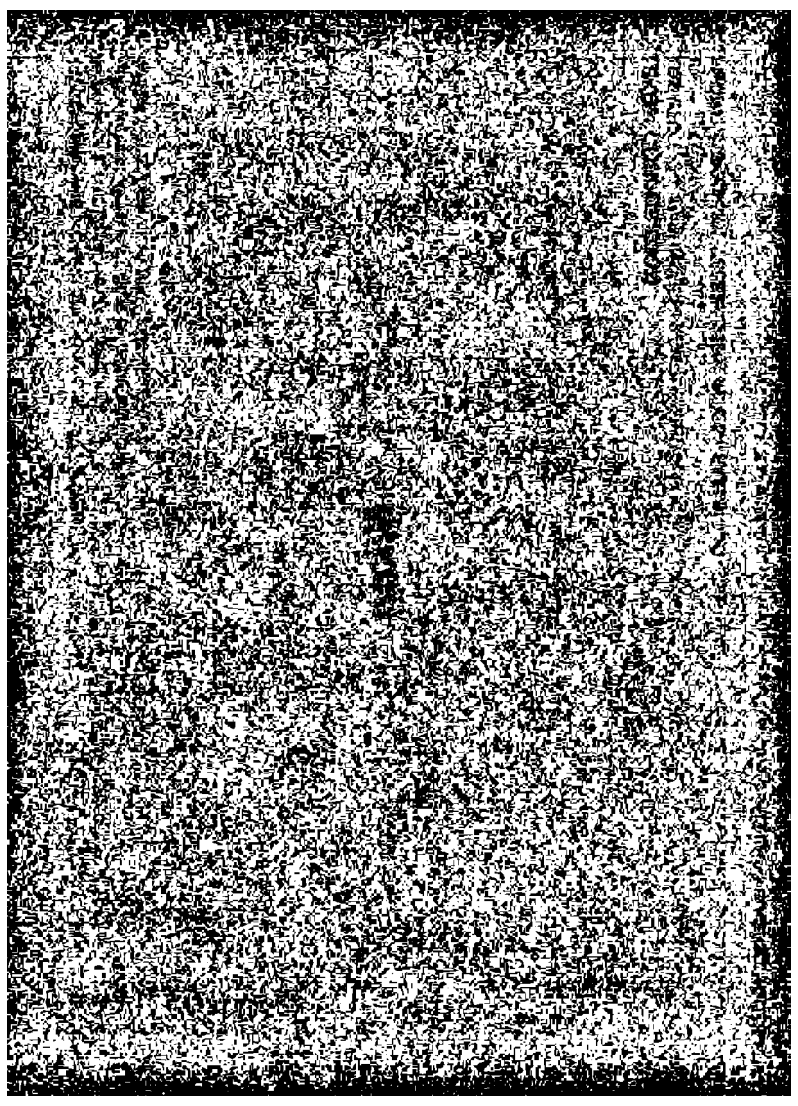
Automatic mode
For non-TTL auto flash operation; light is measured via light sensor in front of the flash unit

Usable apertures in automatic mode

Aperture	Shooting distance range
f/4 (at ISO 100)	A2: 0.8-6.2m (2.6-20ft.)
f/8 (at ISO 100)	A1:0.6-3.1m(2.0~10ft.)

M mode	Full output at M setting: approx. 1/10 power at MD setting
AF assist LED	Automatically fires LED beam toward the subject when performing autofocus with the Nikon F-501/N2020 (Single Servo) or F-401/N4004 camera in insufficient light
Dimensions	Approx. 68 (W)x105(H)x 80 (D) mm
Weight	Approx. 250g (without batteries)
Accessory provided	Soft Case SS-22

Specifications and designs are subject to change without notice.



No reproduction in any form of this manual,
in whole or in part (except for brief quotation in
critical articles or reviews), may be made without
written authorization from NIKON CORPORATION.

Nikon

NIKON CORPORATION
FUJI BLDG,, 2-3, MARUNOUCHI 3-CHOME, CHIYODA-KU,
TOKYO too, japXn
PHONE: 81-3-214-5311 **TELEX:** J22601 (NIKON) **FAX:** 81-3-201-5856

Printed in Japan 8&078-C10